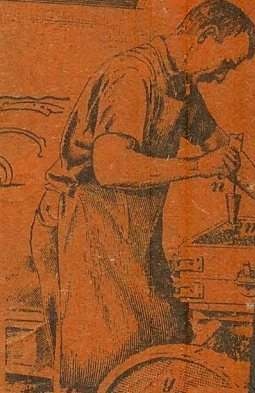
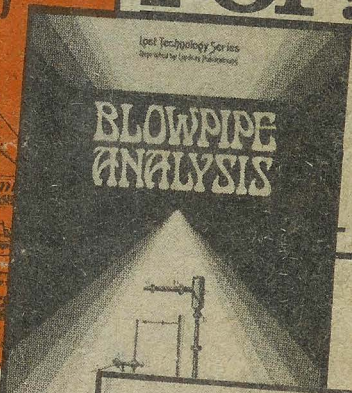
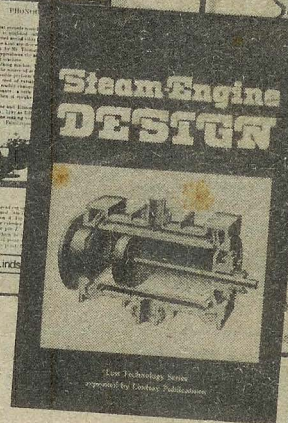
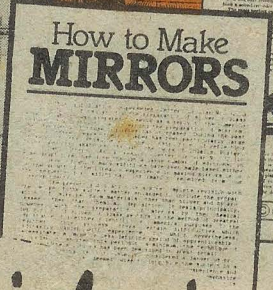
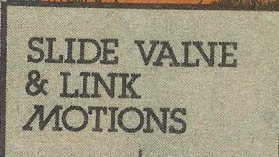
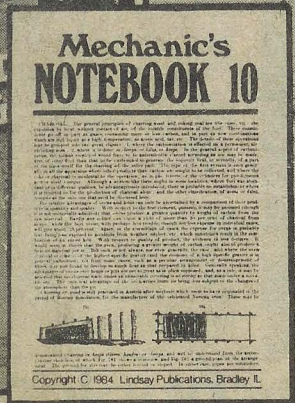
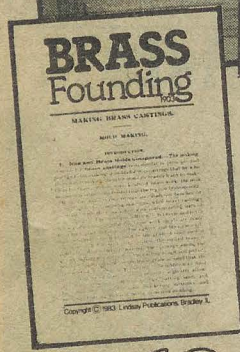


Fall 1985

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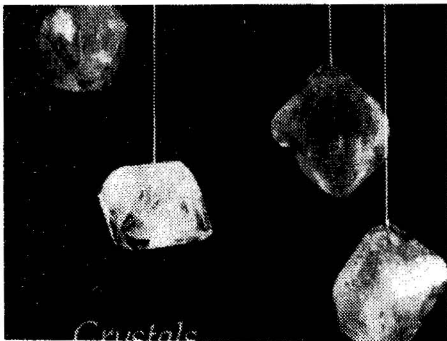
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# Crystal Magic!



## CRYSTALS AND CRYSTAL GROWING

by Holden & Morrison

Crystals . beautiful geometric solids. Grow 'em yourself! You can.

I suppose this book is aimed at rock hounds, since they're usually quite concerned about crystals. But your calculator and wristwatch use liquid crystals. Metal castings form crystalline structures as they cool. They're all around us. It seems almost like magic when they grow.

Here you'll learn about what they are, how they grow, and how you can grow your own easily and inexpensively.

Chapters Include: Solids and Crystals, Solutions, Solubility diagrams, Two methods for growing crystals, Twelve recipes for growing crystals, Building blocks for crystals, The symmetry of crystals, Arrangements of atoms, Cleaving and gliding crystals, Melting and transforming, Piezoelectric effect, Optical experiments, and more. You also get sources of supplies, making a spectroscope, suggestions for research, more books and articles.

Excellent book. Easy to read and understand. It was first published in 1960, so you know it's a good book. Get a copy. A great science fair project for boys and girls.

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# Edison



## EDISON - A Biography

by Matthew Josephson

Edison — the inventor's inventor. Everyone has heard of him. But are all the wild stories we've heard really true? What kind of a guy was he?

Edison never really attended school. He was taught by his mother, and his father was a strange man. Edison's first adult job was as a telegrapher which later led him to invent repeater relays, automatic telegraphs, circuits for sending several different telegrams in different directions over the same wire, and on and on. He even got himself in the middle of a bitter fight between the robber baron Jay Gould and the Western Union monopoly — talk about dirty pool!

To get away from New York, Edison built a lab in Menlo Park, New Jersey. And for ten years excited the world with new inventions from the phonograph and electric light to the electric locomotives and even parts of the telephone (Alexander Graham Bell beat Edison to the patent office by just days.)

By the time Edison went back to New York to build the electric system, he was already a millionaire (at 28). Then came a new lab in West Orange, a second wife (after his first died), moving pictures, an ore separator, an alkaline battery and much more.

Here's the inside scoop on the man who is considered the first professional inventor. You'll find that Edison didn't have time to pursue all his ideas, and that there are probably ideas and inventions waiting to be resurrected somewhere in the more than 1000 patents Edison held.

Read about this incredible guy. Edison's wife finally put her foot down when the inventor turned 75 and told him he had to work fewer hours — so he cut back to 16 hours a day!

Get a copy of this. If you enjoy technology, inventing, collecting, or just about anything you see in this catalog, you should find this biography quite interesting. It's a little slow reading in places, but it's loaded with details that will tell you the truth about what happened and why. After you read this, you can better appreciate who Edison was and why this country and the world is the way it is today. Excellent book. Quite reasonably priced. 6x9 paperback 512 pages with photos

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# Meet America's Greatest Technologists . . .

## TECHNOLOGY IN AMERICA

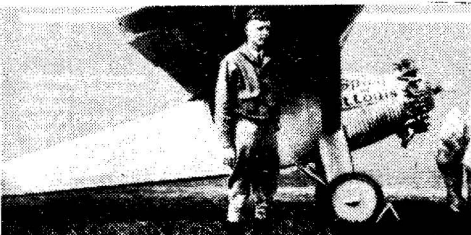
### A History of Individuals and Ideas

edited by Carol W. Pursell

If you were to believe half the loonies running around pulling their hair out today, you'd think that technology is the worst thing that ever happened to us! I suppose considering toxic waste, poisons, and air pollution would make you come to that conclusion. But the truth is that technology is a lifeboat that allows us to exist. Everything from toothbrushes to pencils is a result of technology.

If those people who are doing all the complaining understood half of what is in this book, they might have a different point of view. They'd see how technology progressed from the colonial days through space flight.

In other words, here's a book that will teach you and me how we got here — why the inventors did what they did, and what effect they had on American society. Not only will you be loading your gun to shoot down those radicals who think we should scrap all technology, but you'll have fun reading at the same time!



Chapters cover Thomas Jefferson, Benjamin Latrobe, Eli Whitney, Thomas P. Jones, Cyrus McCormick, James Eads, James B. Francis, Bell, Edison, Eastman, Ellen Richards, Gifford Pinchot, Ford, Lindbergh, Enrico Fermi, Robert Goddard and more. You get twenty different essays by different authors.

Once you read this, you'll appreciate that if people's attitudes and abilities had been somewhat different, our lives today could be radically different. Interesting reading. Great history of technology. 6x9 paperback

264 pages

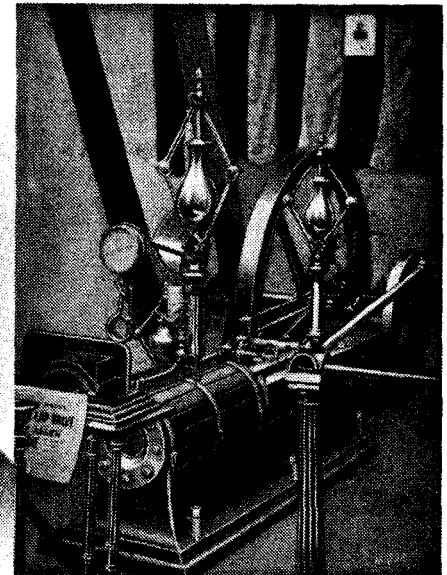
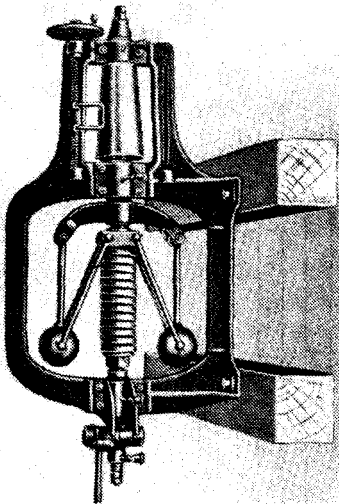
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# Meet Charles T. Porter

## — inventor, engineer, machinist!



### ENGINEERING REMINISCENCES

by Charles T. Porter

Who was Charles T. Porter? One of the most talented self-taught engineers who ever lived. And yet very few people have heard of him.

In the earliest years of this century, Porter wrote articles for "Power" and "American Machinist" magazines recalling his years of developing a superior steam governor, the invention of the high-speed steam engine, steam indicator, and much more. All of the readers of those magazines knew and respected Porter, and his reminiscences were read with delight.

When the series of articles ended in 1908, they were compiled into a book of which only a small number were printed. Today the book is exceptionally rare. At the wise suggestion of Donald B. Strang, a Porter historian, Lindsay Publications has reprinted Porter's reminiscences. They're available again at a small fraction of what you'd pay if you were lucky enough to find an original edition for sale.

Before Porter got hold of them, steam engines rarely turned more than 60 rpm. If they did, they rattled, shook, lost power, exploded and who-knows-what. After Porter finished with them, they were running smoothly and powerfully at several thousand rpm. Porter and his partner Allen built the engines commercially for many years.

What is so great about this book is that it's almost like talking to "the ol' man" himself. His articles read smoothly and interestingly. You'll be amused at the political problems he often encountered in getting his engines exhibited. (People were afraid of them!) You'll find this flat out enjoyable reading.

Twenty-eight chapters cover such topics as: evolution and manufacture of the central counterpoise governor, engineering conditions in 1860, I meet Mr. Allen, Mr. Allen's inventions, analysis of the Allen Link, planning my London exhibition engine design, conditions I found there, remarkable sale of the engine, designs of horizontal bed engines, engine for the Oporto (Portugal) exhibition, trouble with the Evan Leigh Engine, experience in the Withworth works, the steam fire engine in England, return to America, my

shop, the Colt Armory engine, boilers tests in exhibition of 1871, production of an original surface plate, experience as member of board of judges at the Philadelphia Centennial exhibition (1876) and much, much more.

You also get many photographs of the important inventors and machinists of the era along with diagrams and drawings of engines and their components.

Here's a sample from Experience in the Whitworth Works: "I once saw a gang of a dozen laborers working a long grinding-bar, in the bore, 10 inches diameter by 8 feet long, in the tailstock of an enormous lathe. I peered through this hole when the bar was withdrawn. It looked like a ploughed field. Scattered over it here and there were projections which had been ground off by these laborers..."

Mr. Whitworth invented the duplex lathe tool, but I observed that they never used it. I asked Mr. Widdowson why this was. "Because", said he, "the duplex tool will not turn round". After a while I found out why. When our engine was finished, Mr. Widdowson set it upon two lathe beds and ran it. Lucky that he did. The bottom of the engine bed was planed, and it could be leveled nicely on the flat surfaces of their lathe beds. The fly-wheel ran nearly a quarter of an inch out of truth. He set up some tool-boxes on one of the lathe beds, and turned the rim off in place, both side and face being out. That, of course made it run perfectly true. I asked the lathe hand how he could turn out such a job. He replied, "Come and see my lathe." I found the spindle quite an eighth of an inch loose in the main bearing, the wear of twenty or thirty years. . . . And on, and on he goes.

He goes into details about the problems he faced both human and mechanical as one machinist talking to another. This is great stuff.

The John Fritz medal is awarded annually for "Scientific or Industrial Achievement in any field of real or applied Science". I suppose you could loosely interpret that to be the Nobel Prize for inventing. In the years 1905 through 1908 the recipients were Lord Kelvin, George Westinghouse, Alexander Graham

Bell, Thomas A. Edison, and in 1909 Charles T. Porter. It should be evident that Porter was exceptionally prominent as a steam engineer — so much so that he was one of the judges at the 1876 Philadelphia Centennial Exposition which had one of the most incredible displays of machinery ever assembled. Pieces of that exhibition have been saved and are exhibited at the Smithsonian.

Reciprocating steam engines are gone from everyday life. So it's no wonder that no one knows Porter. Only three high-speed Porter-Allen engines are known to exist, one being at the Smithsonian.

So here's a book that is not only awfully fun to read, but is historically important as well. Loaded with interesting commentary and first hand accounts from a man who knew all the big names in industry. Get a copy. Well worth having. you'll like it. 5½x8½ paperback about 400 pages

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### ENGINEERING REMINISCENCES hardcover edition

I've had a fraction of this initial printing hardcover bound for long wear. This book will, no doubt, become a part of many important historical collections, and will need to have a stonger binding. This edition may be sold out by the time you order. If so, we'll send a paper edition, and coupon for the balance owed you. Cat. no. 4368

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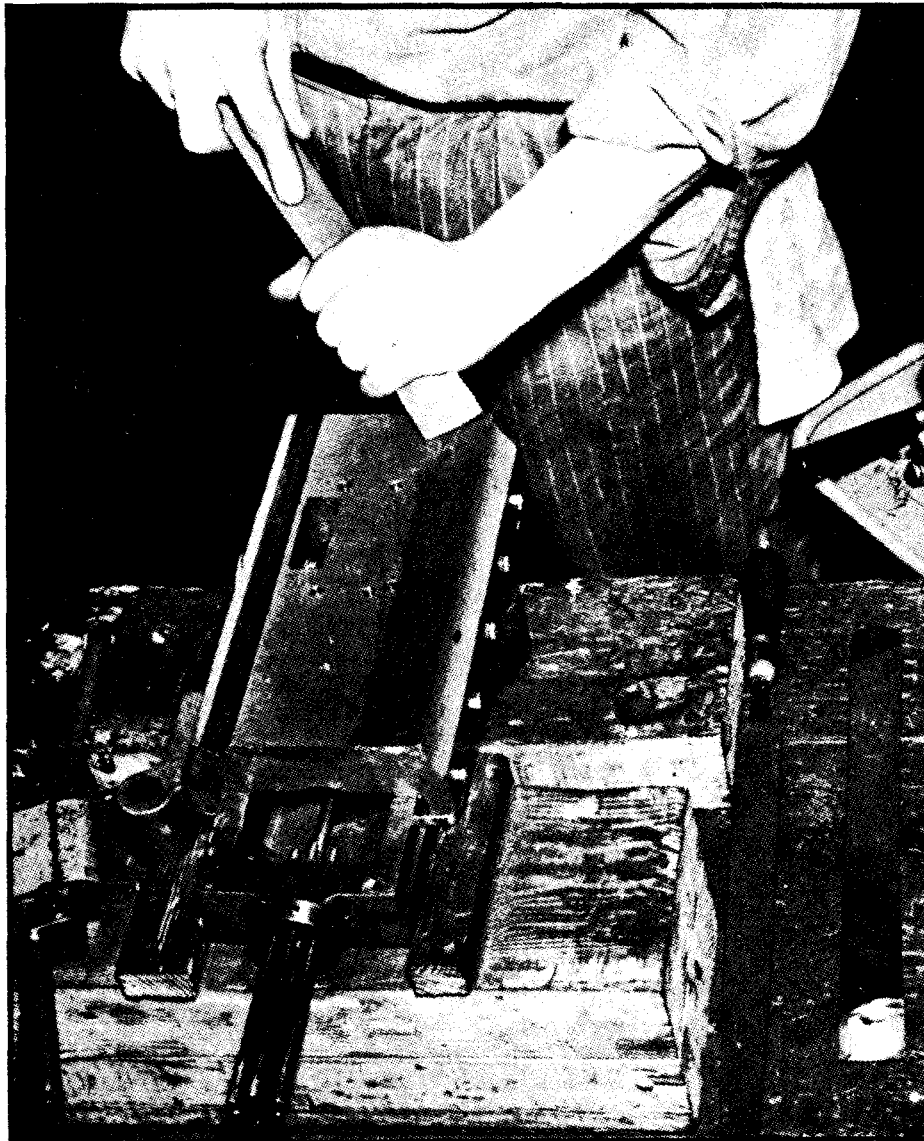
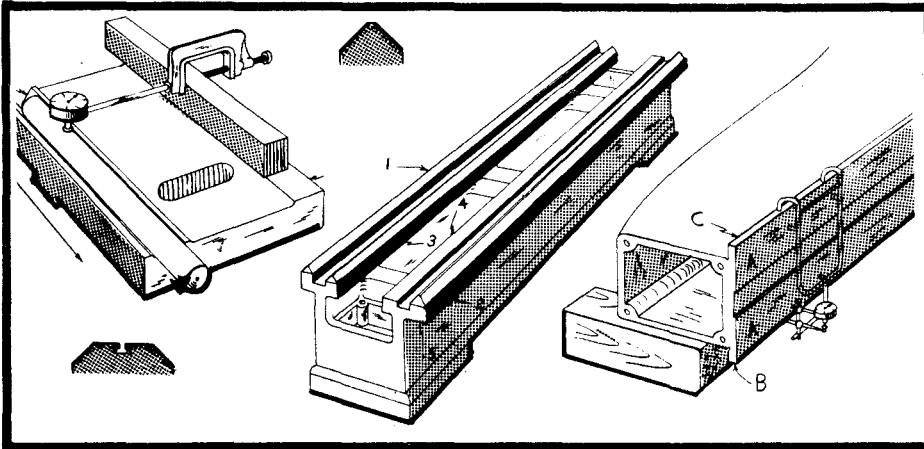
An ongoing search both in the US and Britain has so far turned up only three Porter-Allen engines: one in private hands, one in the Smithsonian, and the one described in the book still holding up part of the Colt armory. If you know of any other engines in public or private hands, or know of any additional information useful for historical research on Charles Talbot Porter please write:

Donald B. Strang  
c/o Lindsay Publication, Inc.  
Bradley, IL 60915-0012

I'll forward your letter to Mr. Strang.

# Restore your machine tools to their original accuracy!

**Make your own precision surface plate!  
Many secrets revealed...**



## **MACHINE TOOL RECONDITIONING and Applications of Hand Scraping**

*by E. F. Connelly*

Just looking at the cover, you'd think this book was a dud. But when you open the cover, you get hit with exceptionally rare how-to information, all of it 100% practical! An amazing book!

Not long ago I went to an auction held by the local school district to unload a lot of used

**Complete! Detailed!  
You can rebuild lathes,  
milling machines,  
grinders, and more!  
Order a copy for your  
library today!**

equipment, including half a dozen small lathes. They sold in the low \$200's which most people thought was too much. But had I known that this book existed, I probably would have bought one. Even though they looked like they had spent the last 20 years in the ape house at the local zoo, using this book I could have brought them back to perform like new — straight, new, with dead-on accuracy.

This book will show you how to recondition lathes, grinding machines, horizontal and vertical milling machines. You say you can pick up a milling machine for a song? But it's worn? Pay the song, follow the instructions in this book, apply elbow grease liberally, and you'll have a top notch machine.

Chapters include: hand scraper, manipulating scraping tools, bench oil stones, surface plate, straight edges, marking mediums, squares, levels, test bars, dial indicator, gibs and their adjustment, grooves, hints on routine, frosting techniques, automatic generation of gauges, factors in reconditioning, surface bearing requirements of slides and ways of precision grinders, problems in alignment, and individual chapters on the lathe, horizontal milling machine, vertical milling machine, cylindrical grinding machine, and surface grinding machine.

You'll find many illustrations, mostly showing how to set up combinations of plates, straight edges and dial indicators to check the accuracy of the equipment so that you know where to scrape it into true.

This is the lost craftsmanship used by Maudslay and Whitworth and the early precision machinists to build their own lathes. This is the Gingery do-it-yourself technique taken to the extreme. Rare information.

This hardcover volume carries a somewhat expensive price tag. Why shouldn't it? You won't find it on your local newstand. Just how many metalworking fanatics like you and me are going to buy a book like this? The price is high, but it delivers the goods.

You might even consider setting up a business rebuilding machine tools. Or maybe you might even want to build custom machine tools. Certainly, the lessons learned here should be applicable to many other precision machines.

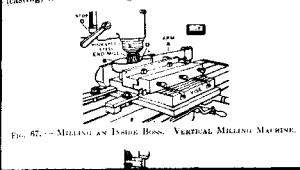
I'm quite impressed. A great reference, particularly when your lathe or milling machine starts acting up. Pull this book off the shelf and find out what the trouble is, and fix it! If you have machine tools, or are considering building some, order a copy. Don't be without it!

A dynamite book. 8 1/2 X 11 hardcover  
533 pages well illustrated  
Cat. No. 1141

**\$36.50**

# ADVANCED MACHINE WORK

104  
VERTICAL MILLING  
87. Bevel circular milling. — To mill work A, Fig. 66, (rotary cone of a circular attachment) bolt to table of circular attachment B and mill bevel with angular mill C.  
88. Milling an inside boss, Fig. 67. — Hold swinging arm A (resting) in vice. Mill edge B, set stop C and feed mill down (resting) in vice.



CUTTING KEYWAYS  
rough. Keyways may be cut in several pieces by above the other.

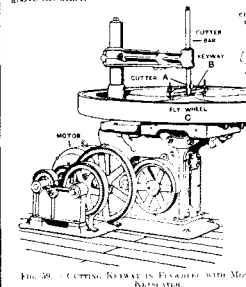


Fig. 59. — CUTTING KEYWAY IN FLANGE WITH MOTOR DRIVEN VICE.

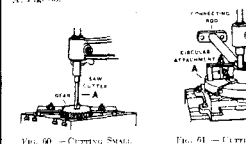


Fig. 60. — CUTTING KEYWAY IN FLANGE.

## ADVANCED MACHINE WORK

### PROBLEMS IN SURFACE GRINDING

#### 3. To grind this machine part, Multiple grinding, Fig. 1.

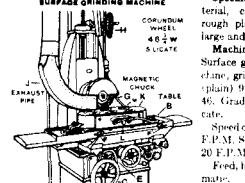


Fig. 1. — SURFACE GRINDING MACHINE.

Specifications: Material, carbon steel rough planed 0.020" large and hardened.

Machine and tools: Surface grinding machine, grinding wheel (plain) 9" x 4", No. 46, Grade 1 W, silicate.

Speed of wheel, 5000 F.P.M. Speed of work, 20 F.P.M.

Feed, hand or automatic.

Information: — Take trial cut.

Fig. 34. — SETTING CUTTER OFF COVER FOR GRINDING TWIST DRILL.

table at zero, outer central, and cross-feed at zero. Move work slide inward 1/2 diameter of blank (100").

III. Adjust clamp.

IV. Mount the blank on center.

Mount blank C on center and secure dog D in driver by screw E. Adjust V rest under middle of blank to prevent springing.

Set table dog to trip feed at desired length of groove.

V. Obtain thickness of work.

Start machine, raise knee and take short trial cut less than required depth. Set vertical dial at zero.

Lower knee, move table back and blank is clear of cutter, index one-half revolution, raise knee to set and take another short cut. Repeat until point is 1" thick.

VI. Mill grooves. Reset vertical dial at zero and mill groove, one cut each.

VII. Mill land clearance. Mount drill A, Fig. 35, on center to mill lands B, with end mill C. Set vertical table 1" angle shown in Fig. 35 and mill clearance 1/2" leaving 1/2" lands, one of more cuts.

Information: — Take trial cut.

Fig. 35. — SETTING TABLE TO GRINDING ANGLE OF TWIST DRILL.

Fig. 36. — MILLING LAND CLEARANCE ON TWIST DRILL.

MAKING TWIST DRILL

check twist drill, Fig. 37.

Fig. 37. — CHECKING TWIST DRILL.

Fig. 38. — SETTING SHAPER FOR SHAPER WORK.

Fig. 39. — SETTING SHAPER FOR SHAPER WORK.

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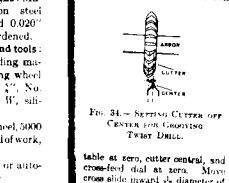


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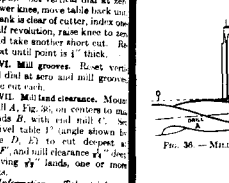


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MAKING TWIST DRILL

check twist drill, Fig. 37.

Fig. 37. — CHECKING TWIST DRILL.

Fig. 38. — SETTING SHAPER FOR SHAPER WORK.

Fig. 39. — SETTING SHAPER FOR SHAPER WORK.

Fig. 40. — SETTING SHAPER FOR SHAPER WORK.

Fig. 41. — SETTING SHAPER FOR SHAPER WORK.

Fig. 42. — SETTING SHAPER FOR SHAPER WORK.

Fig. 43. — SETTING SHAPER FOR SHAPER WORK.

Fig. 44. — SETTING SHAPER FOR SHAPER WORK.

Fig. 45. — SETTING SHAPER FOR SHAPER WORK.

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Fig. 52. — SETTING SHAPER FOR SHAPER WORK.

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Fig. 75. — SETTING SHAPER FOR SHAPER WORK.

Fig. 76. — SETTING SHAPER FOR SHAPER WORK.

Fig. 77. — SETTING SHAPER FOR SHAPER WORK.

Fig. 78. — SETTING SHAPER FOR SHAPER WORK.

Fig. 79. — SETTING SHAPER FOR SHAPER WORK.

Fig. 80. — SETTING SHAPER FOR SHAPER WORK.

## ADVANCED MACHINE WORK

### PROBLEMS IN SURFACE GRINDING

#### 3. To grind this machine part, Multiple grinding, Fig. 1.

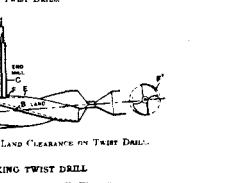


Fig. 1. — SURFACE GRINDING MACHINE.

Specifications: Material, carbon steel rough planed 0.020" large and hardened.

Machine and tools: Surface grinding machine, grinding wheel (plain) 9" x 4", No. 46, Grade 1 W, silicate.

Speed of wheel, 5000 F.P.M. Speed of work, 20 F.P.M.

Feed, hand or automatic.

Information: — Take trial cut.

Fig. 34. — SETTING CUTTER OFF COVER FOR GRINDING TWIST DRILL.

table at zero, outer central, and cross-feed at zero. Move work slide inward 1/2 diameter of blank (100").

III. Adjust clamp.

IV. Mount the blank on center.

Mount blank C on center and secure dog D in driver by screw E. Adjust V rest under middle of blank to prevent springing.

Picture book of  
both simple and  
complex devices!

## 507 MECHANICAL MOVEMENTS

by Henry T. Brown

reprinted by Lindsay Publications

Enjoy! Enjoy! That's what you'll do when you page through this fascinating little picture book — that is, if mechanical movements turn you on.

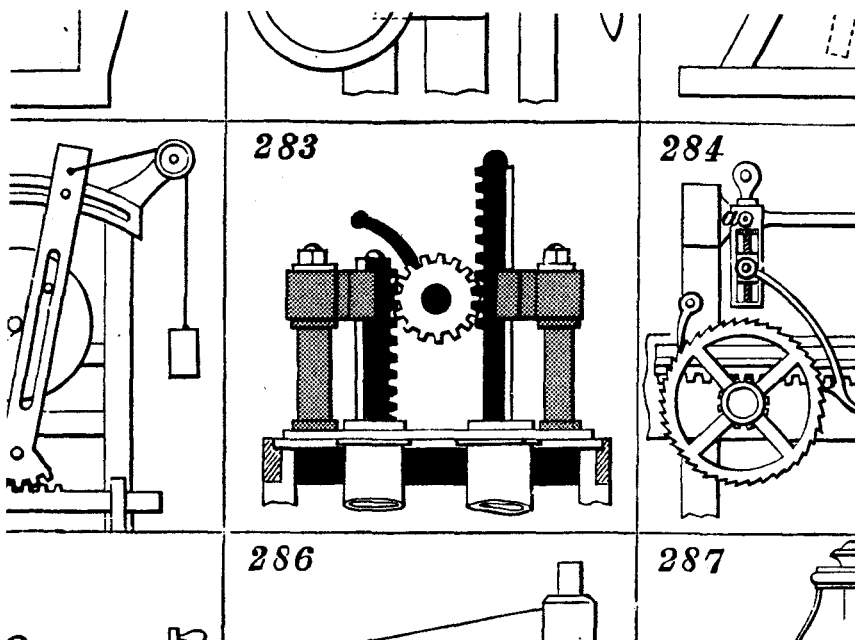
Originally copyrighted in 1868, this 1893 printing carries a complete title of "Five hundred and seven mechanical movements embracing all those which are most important in dynamics, hydraulics, hydrostatics, pneumatics, steam engines, mill and other gearing, presses, horology, and miscellaneous machinery; and including many movements never before published and several which have only recently come into use."

You'll find each left-hand page carries nine illustrations, and each right-hand page presents brief descriptions of their operation. Some of the movements are trivial, but others are quite unusual and interesting. In some cases you'll find that these movements were popular at one time, but are no longer used. Discover Fairbairns' bailing-scoop, Anderson's gyroscopic steam engine governor, or Clayton's sliding journal-box.

If you design machines, this can be very useful to you as practical how-to info. At the very least, you'll find this a great book to browse through on a rainy afternoon. Very interesting. 6x7 paperback 128 pages  
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\$7.95

# 507 Mechanical Movements!



# RUBBER!

## 122 RUBBER HAND STAMP MAKING

which must be perfectly level in order to obtain a surface nearly even with the edge. It is then covered so as to keep off the dust. The cover of course must not come in contact with the smooth surface. In six hours it will be ready for use.

The original copy that is to be reproduced is made upon ordinary paper in aniline ink. One formula for the ink reads as follows: Aniline violet or blue (2 R B or 3 B) 1 oz., hot water 7 fluid oz.; dissolve. After cooling add alcohol 1 fluid oz. and glycerine ¼ fluid oz., a few drops of ether and a drop of carbolic acid. Keep in a corked bottle. Other formulae are given in chapter XVII.

The writing is executed with an ordinary steel pen. The lines should be rather heavy so as to show a greenish color by reflected light.

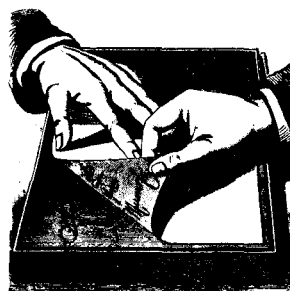
The surface of the pad is slightly moistened with a wet sponge and is allowed to become nearly dry. The paper is then laid upon it and smoothed down. This is best done by placing a second sheet over it and rubbing it.

must rub the paper

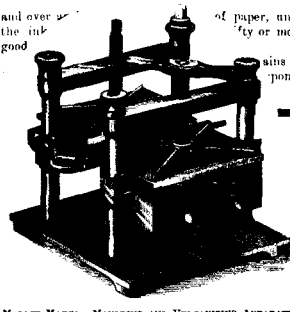


## AND THE MANIPULATION OF RUBBER. 123

smoothed down, and stripped off, when it will be found to have taken with it a complete copy of the inscription or writing. This is repeated over



and over the ink good of paper, until dry or more of sponges



MATRIX MAKING, MOULDING AND VULCANIZING APPARATUS.

## RUBBER HAND STAMPS and the Manipulation of India Rubber

by T. O'Connor Sloane

reprinted by Lindsay Publications

From the year 1890 comes this little gem of a book that will show you how to make rubber stamps. But if this information is a century old, can it still be useful? Absolutely!

Chapters include: sources of India rubber, manufacture of masticated and vulcanized India rubber, stamp making, type making, matrices, making small articles from India rubber, various vulcanizing and curing processes, the solution of India rubber, rubber-like plastics, glue or composition stamps, the hektograph duplicating machines, marine glue, special inks, and much more.

This book is special for two reasons. First, it shows how rubber stamps are made which is a useful skill. Second, you will learn how to work rubber. So maybe you don't have a plantation of rubber trees in your backyard. But did you know that dandelions and milkweed plants produce latex? Their white syrupy sap is loaded with natural latex that can be turned into rubber. And this book is the key to that process.

Since Firestone discovered vulcanizing in 1839, rubber has been a very important raw material. Do you know anyone who knows how to work it? Probably not. But you can! Rediscover the "secrets" that have mostly disappeared when natural rubber was replaced by the synthetics.

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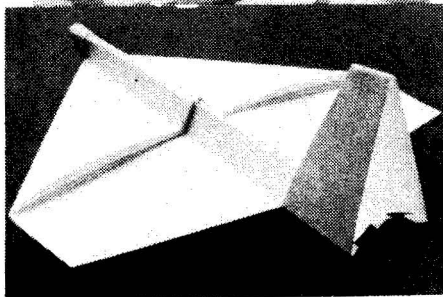
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# Build the ultimate paper airplane!

## THE ULTIMATE PAPER AIRPLANE

With step-by-step instructions for making seven different models of the plane that confounded the experts, outdistanced the competition, and may one day revolutionize the construction of conventional aircraft.



the wings firmly together, cut out along line #10. Finally, make a 1/2" cut in the tail section to form the flaps that will provide reflex action.



17. Holding the plane rightside up, insert a paper clip (for weight) into the front of the fuselage. Then tape the seam of the fuselage behind the paper clip. Also tape the seam on the underside of the fuselage where the tail section is joined together. This tape will reinforce the seams.

### ULTIMATE PAPER AIRPLANE

by Richard Kline

"Step-by-step instructions for making even different models of the plane that confounded the experts, outdistanced the competition, and may one day revolutionize the construction of conventional aircraft."

The authors actually patented the airfoil that was derived from their paper airplanes — and actually tested it in a windtunnel. CBS' "Sixty Minutes" did a segment on the Kline & Fogelman airplanes, so you know these "toys" are out-of-the-ordinary.

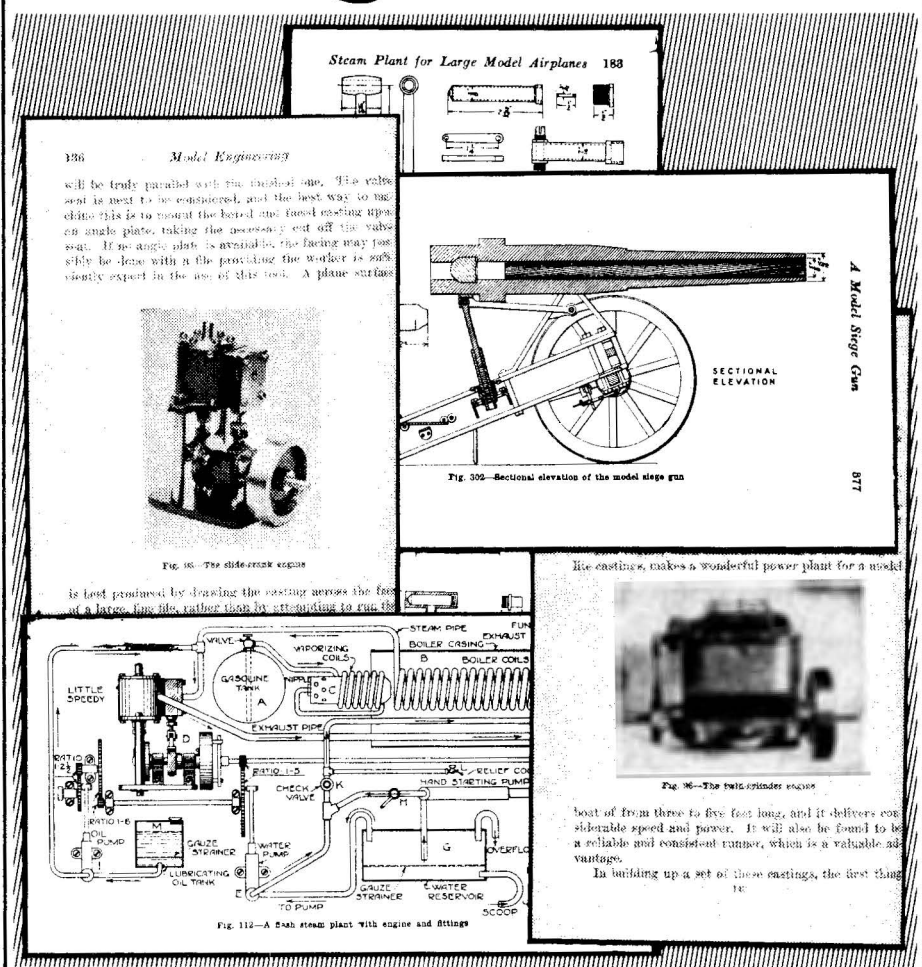
Using scissors, rubber cement, tape, strong paper, etc. you make paper airplanes that will put your grade school models to shame. Build the Sky Hawk, Super Hawk, Voyager and more. Some have landing gear. Some are made to soar long and smooth, while others are fast and maneuverable.

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# Dynamite model making ideas!



### MODEL MAKING

by Raymond F. Yates

reprinted by Lindsay Publications

You'll like this! The title page of this 1925 gem reads: "A practical treatise for the amateur and professional mechanic — giving instructions on the various processes and operations involved in modelmaking and the actual construction of numerous models, including steam engines, speed boats, guns, locomotives, cranes, etc. Lathe work, pattern work, electroplating, soft and hard soldering, grinding, drilling, etc., are also included."

Sounds like a great book doesn't it? Actually the claims are a little inflated, because it tries to cover too much. Each topic could be a book in itself. Still, it is fascinating, and guaranteed to fill your head with ideas. When it comes to actual machine shop practice, you'll find much better books elsewhere in this catalog. But when it comes to plans for simple engines, this book really shines.

Chapters include: workshop, lathe work, drilling, soldering, hardening and tempering steel, abrasives, patternmaking, electroplating, model slide crank steam engine, model twin-cylinder engine, single-cylinder engine, model twin-cylinder marine engine, flash steam plants, flash steam plant for large model airplanes, flash steam plant for small

model airplanes, model steam turbine, design and construction of model boilers, boiler fittings, model hydroplane, lake freighter, sharpie-type boat, submarine chaser, chaser with radio (!?) control, model crane, double-drum hoist, gasoline engine, electric locomotive, model steam locomotive, gyroscope railroad, tank, siege gun, sundial, steam yacht, 34" monoplane, and more!

Some of these projects need castings which are not available. But with all the dimensions and photos and the like, you should be able to modify and improve the designs. This is great raw material for the model builder.

The price is higher than I'd like to see it, but you still get your money's worth. I'll probably never have time to build any of these models, but I still get a kick out of reading this gem.

So if you have a small lathe and need something to build, or you like to collect plans for future projects, or you just want a great book for a rainy afternoon, jump on this. Grab it. It's a goodie. 5 1/2 x 8 1/2 paperback 430 pages.

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**SMALL TIME OPERATOR**  
**"How to Start Your Own Small Business, Keep Your Books, Pay Your Taxes, & Stay Out of Trouble!"**

by B Kamoroff, CPA

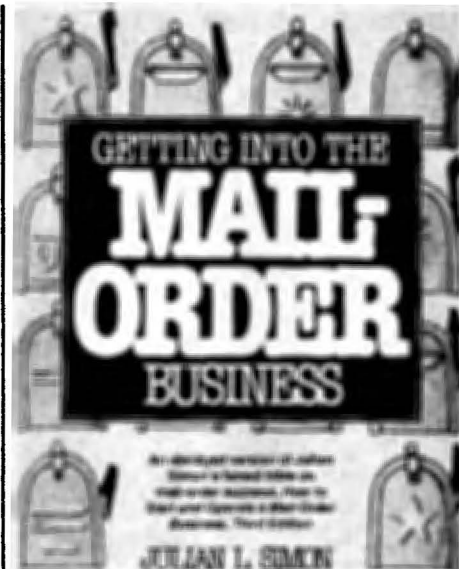
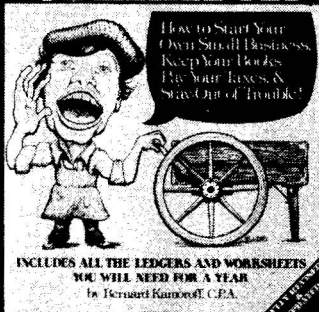
Probably the Biggest nightmare that anyone launching a business experiences is the paper work. Yet Kamoroff, a certified public accountant, will show you how to slip into a profitable business with the least red tape and least hassle.

Learn about: markets, location, financing, name registration, licenses, permits, sales tax, federal ID numbers, insurance, and choosing a business name. Chapter two will introduce you to bookkeeping, making it about as painless as possible. The third chapter will teach you about expanding your business: hiring help, keeping a payroll, partnerships, and corporations. You'll learn practical procedures for figuring taxes, deductions, balancing bank accounts for farmers, how to handle bad debt, and more. And you'll find plenty of examples.

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# Practical!

## SMALL-TIME OPERATOR



**Getting into the MAILORDER BUSINESS**  
 by Julian L. Simon

Simon's down-to-earth advice got Lindsay off the ground, and prevented us from going bankrupt. Mailorder is exceptionally risky, but Simon will tell you what to expect and how to make the right decisions.

This book is actually a trimmed down version of Simon's first book which appeared about 15 years ago. All the essentials are here from choosing products, to writing ads, to determining if there is enough customer interest to continue, and more. It's jam packed with details — lots of how-to.

There are a lot of mailorder books on the market which tell you that you can make a fortune. The truth is that fortunes CAN be made, but they can be lost too. Simon will show you how to turn a profit rather than a fortune, and avoid loss. He's done it himself. He's a realist, and that's the strength of this book.

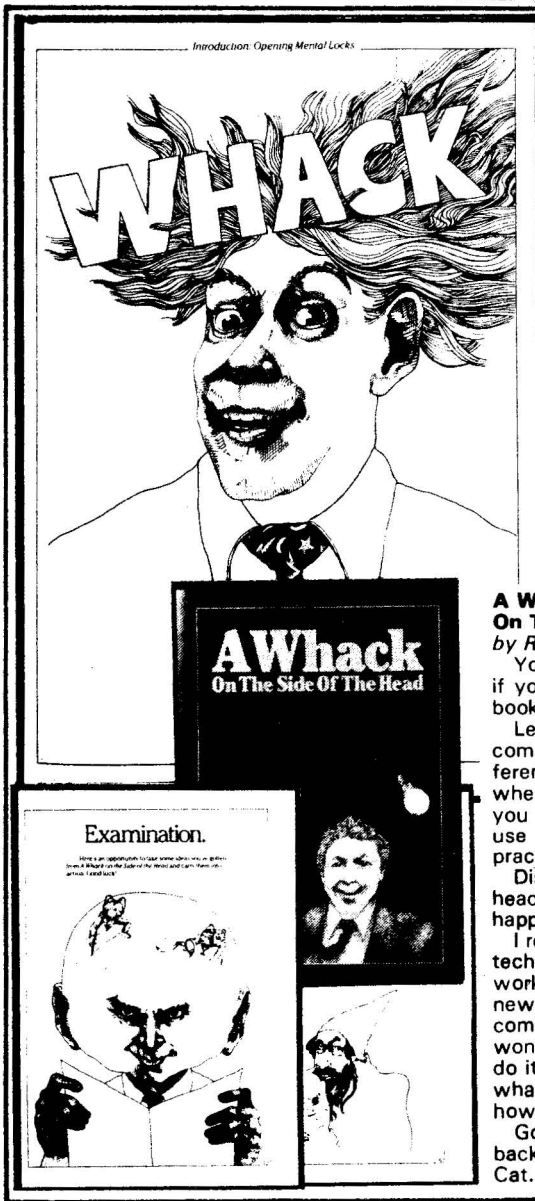
It worked for me, so I recommend it highly. If you've got a machine, product, plans, or something you want to try marketing via mail, then start with this book. No book has all the answers, but you won't go wrong with this volume. Get a copy. 6x9 paperback 283 pages Cat. no. 593 \$10.95

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**A WHACK On The Side Of The Head**  
 by Roger van Oech, PhD

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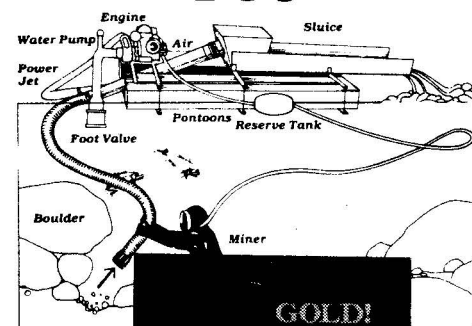
Learn 36 tips to help you open the ten most common mental locks. Understand the difference between soft and hard thinking, and when to use each type. Learn why and when you should break the rules. Find out how to use impractical ideas as stepping stones to practical, creative ideas.

Discover why a "whack on the side of the head" can sometimes be the best thing to happen to you.

I really like this book. I've used some of the techniques taught here, and they definitely work. One good idea can open up a whole new world for you. Some people are always coming up with new ideas, and everyone wonders in awe how they do it. Well, you can do it too! Get a copy of this. Give yourself a whack on the side of the head, and see just how creative you can be too.

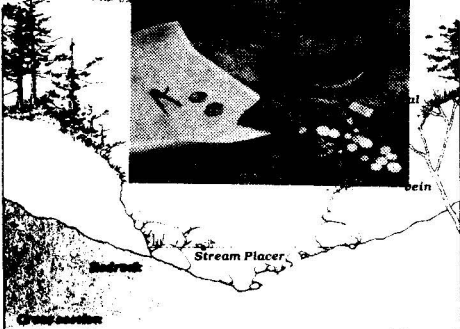
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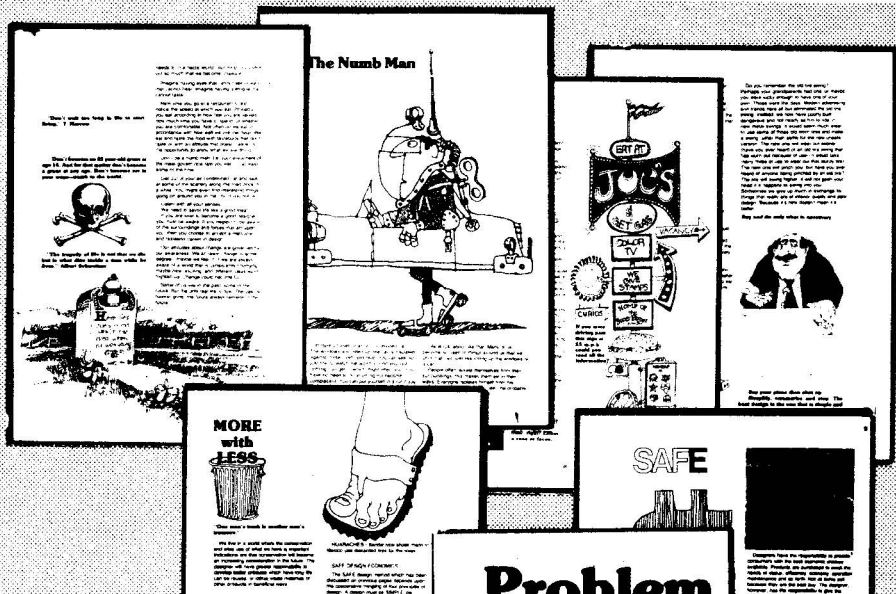
Chapters include: history, where to begin your search, equipment, using a pan, sieve, sniffer, sluice, hydraulic concentrator, metal detector and more. You also get chapters on amalgamation, staking your claim, heading for the hills, survival, suppliers and more.

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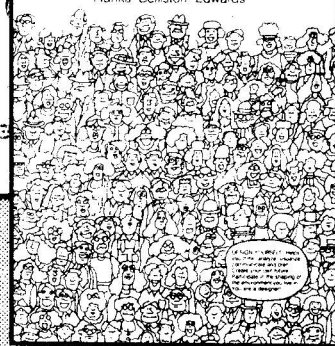
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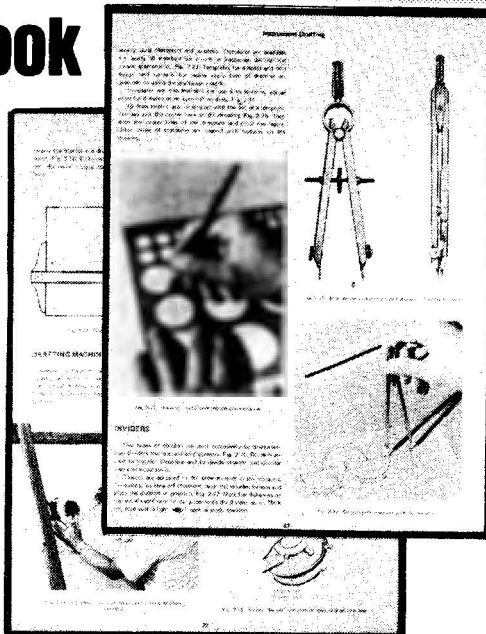
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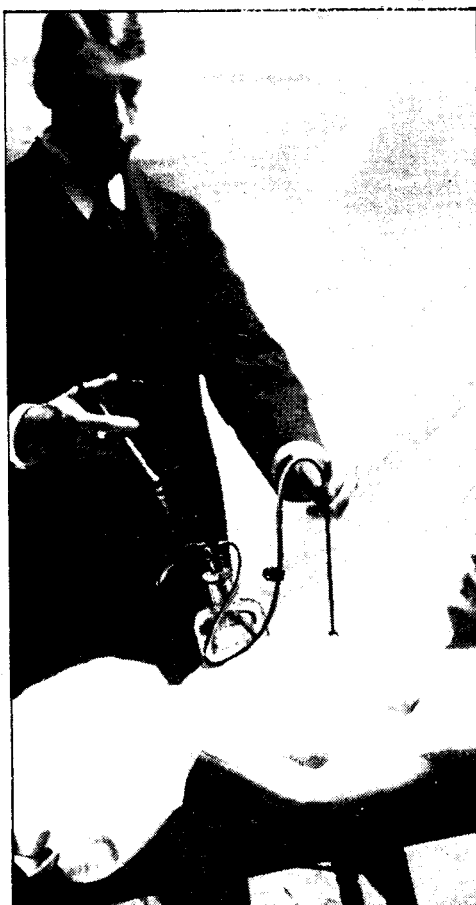
What you don't get are the many, many pages of human anatomy. That was left out. You can get that from your local library if you need it.

Yes, there are pictures, but they're not all that grotesque. If you're expecting to see mangled corpses, forget it. Not here.

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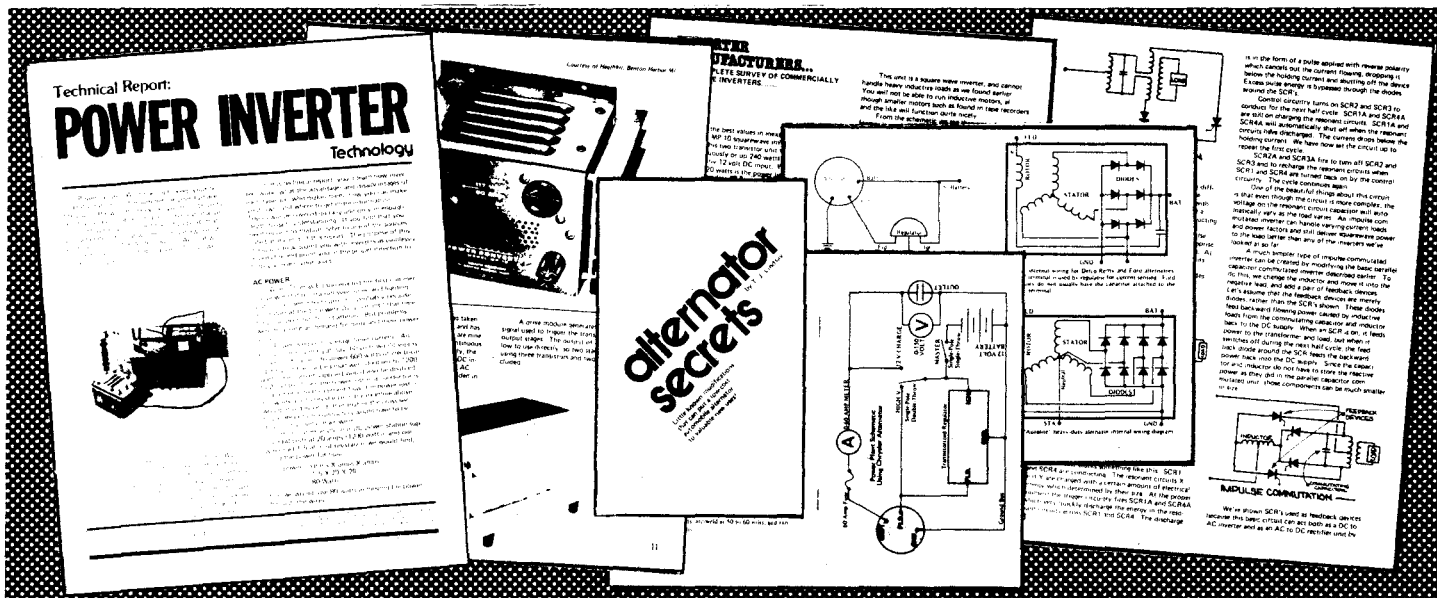
Poundstone covers everything from the formulation of Coca-Cola to Kentucky Fried Chicken's secret herbs and spices. Learn about the weird stuff on money, "secrets" of credit card numbers, universal product codes, the formulation of perfumes, the way playing cards can be marked, sealing envelopes and more. Learn how to beat a lie detector, the inkblot tests, the secrets of sawing the woman in half, secret radio frequencies, even the truth about Walt Disney's body being frozen in suspended animation.

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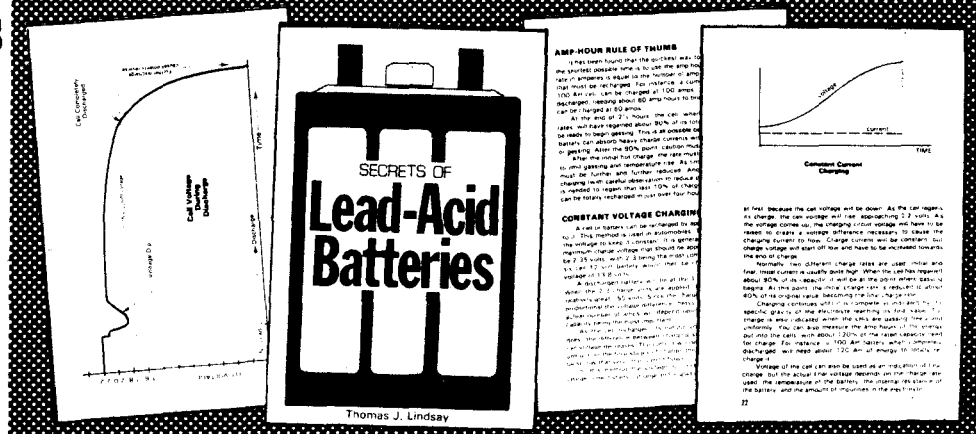
### SECRETS OF LEAD-ACID BATTERIES by T. J. Lindsay

To get the most from lead-acid cells when used in electric cars, alternate energy systems, and other applications, you should have this manual.

You'll learn how batteries are rated, built, the different types of charging, how they discharge and why they fail. Learn how to quick charge, equalize cells, and even perform a "rejuvenation" treatment that helps some "sick" batteries. Testing of used batteries and electric auto applications are covered.

Much more than basic information, but without heavy mathematics and chemistry. Get a copy!  
5 1/2 x 8 1/2 44 pages  
No. 86

\$5.00



Lindsay Publications Inc, PO Box 12, Bradley IL 60915-0012

## Great reprint

## reprinted by Lindsay Publications

Sure, this book is a reprint from a detailed section of "Modern Engineering Practice" originally published in 1905, and modern alloys and tool steels are much better today. But you'll be surprised at what is possible with basic machine tools, knowledge, and ingenuity.

Learn about basic measuring tools needed, annealing, hardening and tempering, making flat drills, single lip drills, twist drills, and hardening twist drills. Next learn how to make fluted hand reamers, rose reamers, single, three or four lipped roughing reamers, inserted blade and adjustable reamers, and a variety of tapered reamers.

Learn how to machine and harden both standard and expanding mandrels for turning work between centers. Also covered are eccentric arbors, and arbors for milling machines. Learn the secrets of making and hardening taper, plus, bottoming, screw die hob, square thread, adjustable and inserted blade taps.

Part II starts out with thread cutting dies, both square and round. You'll learn about spring screw-threading dies and die holders. A variety of different counter bores are discussed.

Then comes a discussion of hollow mills and forming tools. Next is an extensive section on milling cutters: solid cutters, spiral milling cutters, cutters with interlocking teeth, angular cutters, cutters with inserted teeth, spiral end mills, end mills with center cut, t-slot cutters, face milling cutters, and on and on.

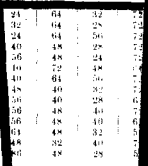
Learn how to lay out jigs and fixtures, make punches and dies for punch presses, make flat, plug, ring, snap, limit, receiving and locating gauges.

To make these tools you'll need a lathe and probably a milling machine, and in some cases a tool grinder. You can buy one, but you could probably build one or just put a tool grinder attachment on your lathe. If you're sophisticated enough to want to make your own tools, then you probably already have or have your eye on the tools you'll need.

I don't guarantee that the tools produced here are the best or as good as today's, but they performed very well producing precision work. No doubt, properly made they'll give you excellent performance as well.

If you're really into home machining, get a copy of this — for reference if nothing else. It can save you a bundle of money. You can also impress the heck out of some of your not-so-mechanically-inclined friends when you pull a precision end mill off the shelf and tell them you made it yourself!

Tool making separates the craftsmen from the hackers. Be a craftsman and order a copy today.  
5½x8½ 208 pages heavily illustrated  
Cat No. 4040 \$9.95



## Great mechanics are creative!

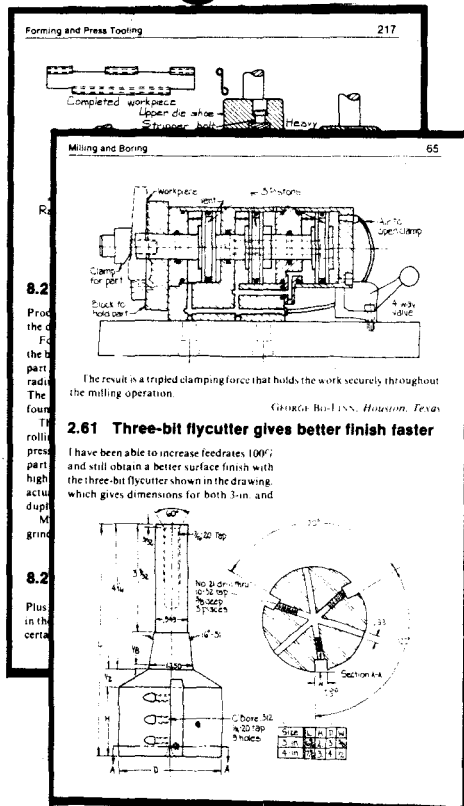
Many of the reprints in this catalog are useful just as they are. They'll show you how to build something useful using simpler technology. But don't overlook the fact that they provide raw material for the creative person.

Every book is loaded with ideas. An idea in Toolmaking may have an application two years from now in some way that has nothing to do with tools. Or a basic principle in dynamo design might be needed to perfect some electrical design somewhere else.

In other words, the books you see in this catalog are valuable because they provide raw material that can be fed into the creative process. These old books are food for the mind.

When you read this catalog and the books you order from it, use your imagination. What you read should create dozens of new ideas — more ideas than you'll ever have time to pursue. The person with that kind of imagination and creativity will always find life exciting.

# Hints and Tips from American Machinist magazine



## PRACTICAL IDEAS for Metalworking Operations, Tooling and Maintenance by American Machinist Magazine

You'll enjoy this reprint of hints and tips from the pages of recent American Machinist magazines. Hundreds of short well-illustrated articles will show you jigs for cross drilling screws, adapter plates for aligning opposing blind bores, expanding your mill vise capacity for flat work, adding a mechanical tracer to the toolroom lathe, and more.

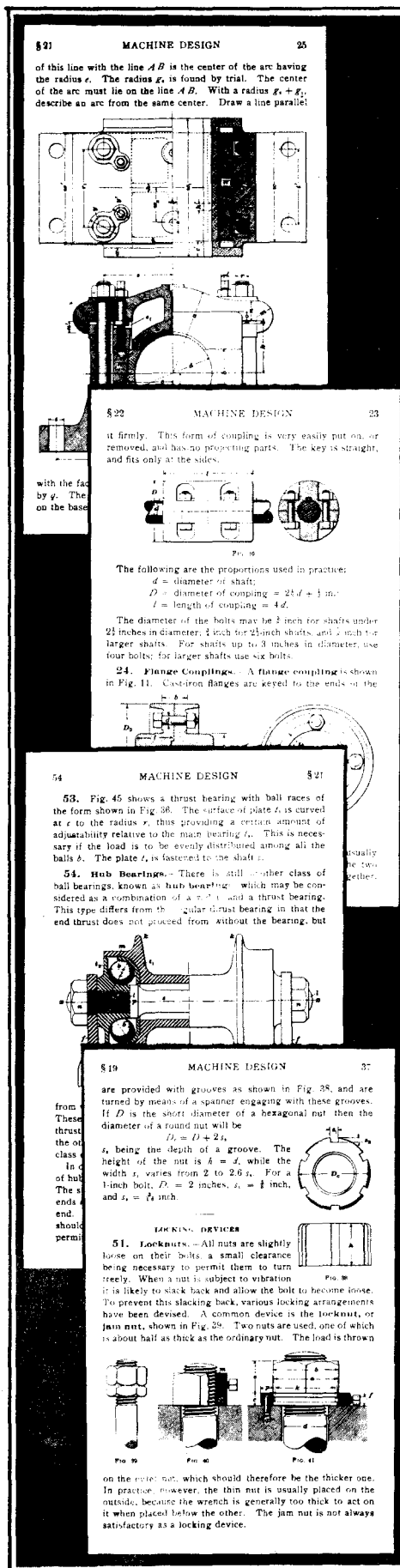
Discover a quick way to drill to accurate depths on a lathe, how to stack turning tools to take an extra heavy cut, how to grind small compound angles, how to flycut Woodruff-style keyways, and more.

You get illustrated how-to for drilling, milling and boring, grinding and finishing, cutoff and sawing, threading, tools and tooling, bench work, layout, inspection, measurement, joining and assembly, and more.

Although this book is intended to save professional machinists time and trouble, a great many of the ideas could become small tool projects ideal for the amateur. Great lessons to be learned. Great ideas to try out. If you're really into machining metal, you'll not only find this fun reading, but helpful as well. An interesting book at a fair price. Grab one. 6x9 hardcover 333 pages

Cat. no. 1245

\$19.95



# Learn machine design!

## MACHINE DESIGN 1907 — Part I reprinted by Lindsay Publications

Enroll in a turn-of-the-century class to learn the elements of machine design. There's a lot you can learn, no matter what you think you may already know.

Learn about threads, their proportions, how to calculate diameter holes before tapping and the like. Learn about foundation bolts, lock washers, keys, cotters, riveted joints, journals, and bearings.

Sure, you know how these simple components are used. But do you know how to calculate their strength? What size should roller or ball bearings be to handle a given load? How about simple brass journals?

The strength of this book is that it delivers simple formulas. —the down-to-earth mathematics that you can punch into your pocket calculator and get useful answers. What's the sense in spending a month of Sundays building a machine only to find that you didn't put large enough bearings in it? Or the bearings were much bigger than necessary and cost much more than they needed to. The formulas here will put your designs in the ballpark and will tell before you build whether or not the design is worth building. This is what engineers have always done. Copy their methods.

There are many college textbooks on machine design now on the market, but they're expensive and they use heavy math. What you get here is a lower cost book that will teach you valuable lessons with simple formulas. If after finishing these lessons, you want to go on, the "heavier" books on the market will be much more understandable. In other words, this is a good place to start.

If you design machines now or intend to and you haven't had a college course in machine design, you'll find this book valuable. And the price is right. Add a copy to your reference library. 5 1/2 x 8 1/2 paperback, 192 pages

Cat. no. 4333

\$8.95

## MACHINE DESIGN 1907 — Part II reprinted by Lindsay Publications

More of the same valuable info! Learn about shafts, couplings, springs, flat belts, pulleys, rope transmission, chain drives and gears of all kinds.

As in Part I, you get all the formulas necessary for calculating the stresses and strains, and the shapes and sizes necessary for handling these loads.

Basic information for the machine builder. Get a copy. 5 1/2 x 8 1/2 paperback 192 pages

Cat. no. 4341

\$8.95

## PACKAGE MACHINE DESIGN 1907 — Parts I & II

Get both volumes of Machine Design and save \$3.00.

Cat. no. 924

\$14.95

# STEAM AIRPLANE! ROCKETS

**Yes, you heard right! Steam!  
Great plans!**

## STEAM AIRPLANE

by *Model Engineer Magazine*

What? A steam airplane? That's right!

From out of the pages of *Model Engineer Magazine* released in 1913 comes a series of five articles complete with photos, drawings, and construction details for fabricating a complete steam power plant for powering model airplanes.

An alcohol- or benzene-burning flash steam boiler powers a two cylinder opposed engine that with a 15" propeller provides in excess of 16 ounces of thrust for several minutes. And it all weighs no more than 2 pounds!

There are no castings. The cylinders are fabricated from tubing about 7/8" diameter, and the crank, pistons and the rest are small enough to be easily machined out of solid stock. Nominal stroke is 1/2". The crank case is fabricated from sheet metal, and a rotary valve is used. It's a surprisingly simple engine.

The boiler is fabricated from tubing with a perforated protective casing. You get all the details including great drawings of the boiler, burner, shrouds and everything you need to know.

You don't get plans for the model plane, but those shouldn't be too hard to find. Judging from the photos the wing span looks to be four to five feet across.

But you don't have to build the plane to have fun. If you were to use this powerplant in a radio control boat or car, you could increase the fuel and water load to give much greater running time. That's a possibility.

If nothing else, this is a fairly simple project, one that could be built on any small lathe such as a Sherline or Unimat. About the only thing special you might need would be a Mapp gas torch to braze the sheet metal. This would be a great first engine to try. Or if you have built an engine, this would be a great novelty.

PART II covers boilers and feed water pumps. Apparently the magazine editor was swamped by requests for details on what boilers to use to power all the models being built in the teens. He fired back with a three part article describing a variety of practical solutions from Babcock type water tube boilers to water tube flash boilers.

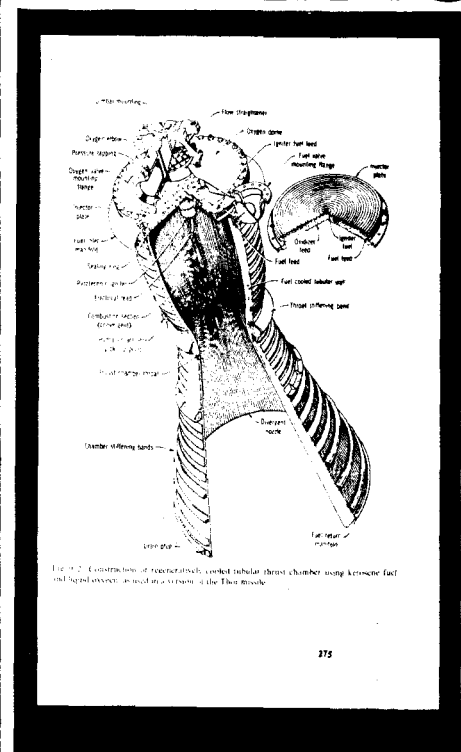
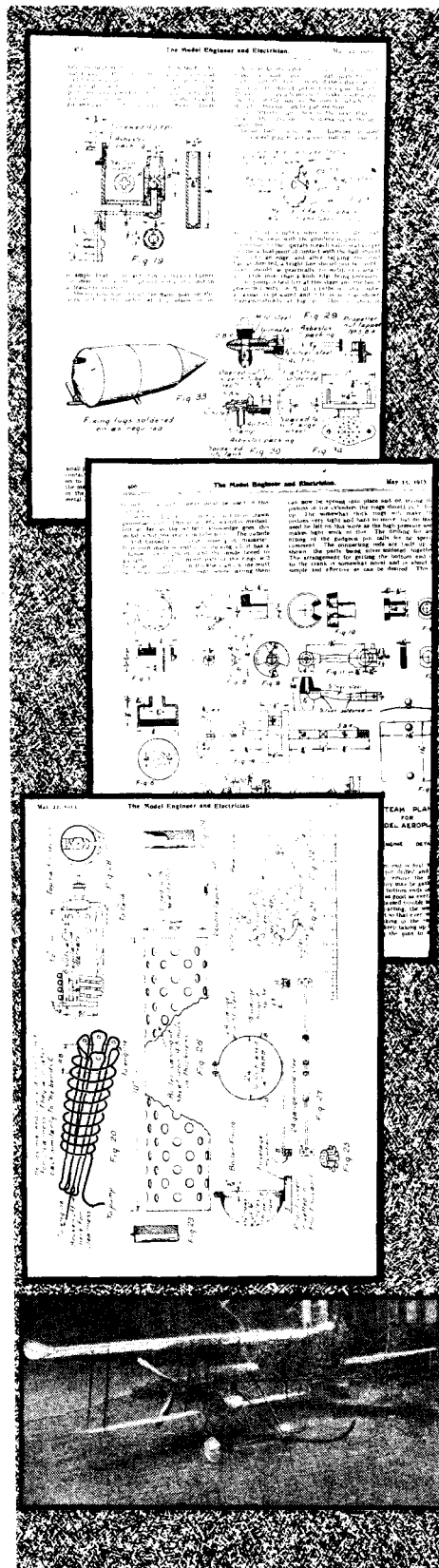
The Babcock boiler, by the way, was in response to many requests from amateurs wanting to generate their own electricity. Many model makers built small engines to turn homebuilt dynamos (dc generators) for hours on end. With today's interest in alternate energy, that might be a practical project once again.

The author describes all kinds of practical details from construction details to descaling, to problems encountered in scaling down boilers and feed water pumps. If you're at all interested in model steam, this is great reading.

I was fascinated by these two articles. Just hearing about the successes and failures that went into the steam airplane was interesting enough, but the plans provided are super. I liked it, and I don't even consider myself to be that much of a steam buff. If steam is your thing, I think you'll like it even more. 8 1/2 x 11 booklet 39 pages heavily illustrated

Cat. no. 876

\$5.75



## ROCKET PROPULSION ELEMENTS

by *Sutton & Ross*

Rockets have been around for thousands of years. But have you ever seen the incredible workmanship that has gone into the space shuttle engines? It's an incredible science. It's mechanics, hydraulics, chemistry, plasma physics, machining, metallurgy and a whole lot more.

You can read about rockets in many different books and magazines, but they insult your intelligence. They talk to you as though you're too stupid to understand (more likely, the author doesn't understand).

Here's a super book that will give you details — meat. You'll get charts, diagrams, cutaway drawings, photos, formulas that will show you how engines are built, how and why they work, and why they are built the way they are.

Chapters include nozzle theory, heat transfer, flight performance, rocket propellant performance calculations, liquid rocket fundamentals, combustion, and engine systems. You'll find solid propellant fundamentals, combustion and components. Also fascinating are advanced techniques: electrical propulsion, gas-core fission rockets, nuclear rockets, detonation rockets and more.

You'll find dynamite illustrations like: Thor rocket thrust chamber showing regenerative cooling systems, flow diagram for staged combustion cycle used in space shuttle main engine, the liquid hydrogen pump used in the J-2 engine which is smaller than an oil drum but kicks out 8600 hp!

This is an expensive book written for professionals, but it tells you what is happening now. Everyone knows what the space program is about, but practically no one knows anything about the technology involved. This is the inside scoop. If my professional automotive machinist friend raves about it, then you know it's good. Get a copy. 6x9 hardcover 557 pages

Cat. no. 1234

\$49.50



# Steam Turbines!

## STEAM TURBINES

by Walter S. Leland  
reprinted by Lindsay Publications

The subtitle reads "a practical work on the development, advantages, and disadvantages of the steam turbine; the design, selection, operation, and maintenance of steam turbine and turbogenerator plants." Quite a title! Quite and interesting book...

Chapters include history, fundamental principles, nozzle, compounding, types of turbines, low-pressure turbines, installation, performance, tests, commercial impulse turbines, commercial reaction types and combinations.

The original work was first brought out in 1910 when reciprocating engines were still in wide use. Here you'll find loads of illustrations and easy-to-read text aimed at the 1910 steam engine crowd to educate them to turbines. You won't find much math, but what there is, is practical algebra.

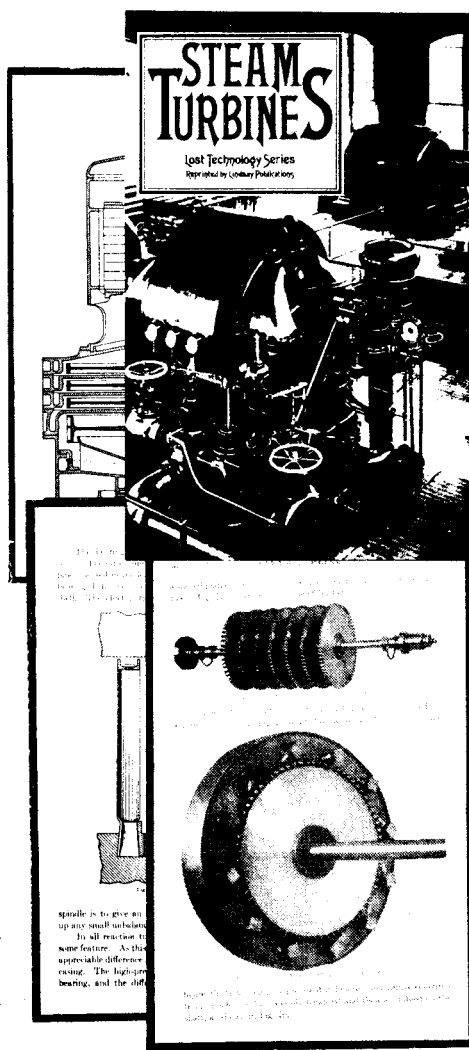
This is not a how-to-build-a-turbine book, but there are so many details here that I can't help but think a machinist is going to use this to develop a small powerful turbine. You'll see charts comparing turbines and conventional engines, simple calculations showing how power is calculated, how blades are mounted in the wheels, cross-section of bearings, packings and much more.

There are many turbine books from the turn of the century, but usually they're theoretical or very lacking in detail. I've reprinted this particular book because it hits halfway between; detail without scary theory. And like all the books I reprint, this one is loaded with ideas that should stimulate a mechanic, machinist or power buff into developing his own version.

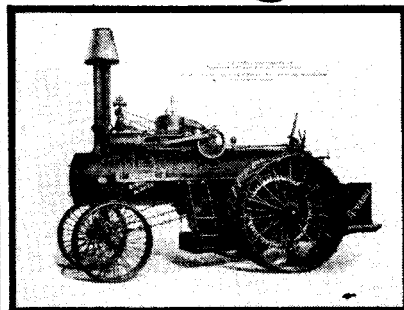
If you're just curious about steam turbines, or a steam buff to the hilt, I think you'll find this book useful, and at the very least, good reading. Although they just turn in one direction very fast, steam turbines are nonetheless very sophisticated machines, and that in itself make them interesting. An excellent book. Loaded with illustrations. 5½x8½ paperback 140 pages

Cat. no. 4201

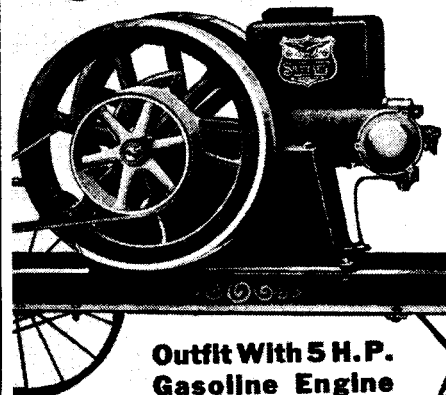
\$8.95



# Old Engines!



## Engine and Truck with De



Outfit With 5 H.P.  
Gasoline Engine  
With Webster Magneto

**\$189<sup>00</sup>**

## SATTLEY KEROSENE AND GASOLINE ENGINES

by Montgomery Wards

Get a copy of this. Great pictures of 1918 one-lung engines. Great cutaways, manufacturing scenes, accessories and so on. Great reading, at a low price. You'll like this! 8½x11 booklet 32 pages

Cat. no. 1174

\$4.00

## SERVICING MAYTAG MULTI-MOTORS

by Maytag Company

If you have a Maytag engine model 82, 72D, or 72DA with Wico FW-1718 magneto models, you should have this. Or if you just like cutaway and detail drawings of old air cooled engines, this would be a great buy. You'll learn how to clean, adjust and rebuild these classic old engines. About twenty years ago a friend of mine bought an old Maytag engine from a scrap yard for a couple of bucks, built himself an unlicensed (and unsafe) motor bike, raced up and down the streets until the neighbors tarred and feathered him! He could have used this book. Good material at a low price. 8½x11 booklet 28 pages

Cat. no. 1176

\$4.00

## ADVANCE MACHINERY

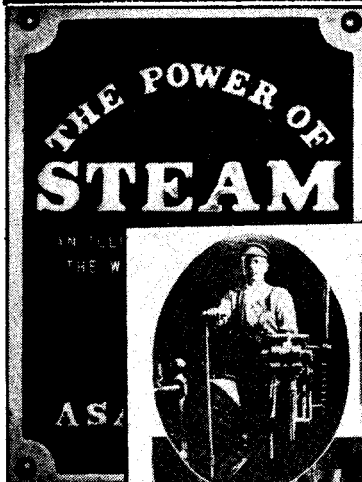
by Advance Thresher Co.

Discover "modern" steam tractors of the 1909-10 in the front half of this well-illustrated catalog. See the details: gearing, shafting, cutaways of the compound steam engines, the boiler for either straw or wood and coal. In the last half of the book see the workings of separators (threshing machines). Interesting reading. 8½x11 booklet 68 pages

Cat. no. 1175

\$5.00

# POWER OF STEAM!



## THE POWER OF STEAM

An Illustrated History of the World's Steam Age by Asa Briggs

Fun book! Just what the title says, a fascinating picture book of steam from Watt to steam traction. Not a railroad book!

Originally published in England, this US edition is top quality loaded with photos, drawings and engravings of engines used in British coal mines, ships, autos, recreation, and anywhere power was needed. You'll find page after page of pictures showing engines, boilers and how they were used.

If you're a steam buff, you'll like this. A great book for a rainy Saturday afternoon. I really like it. 8x9 paperback 208 pages heavily illustrated.

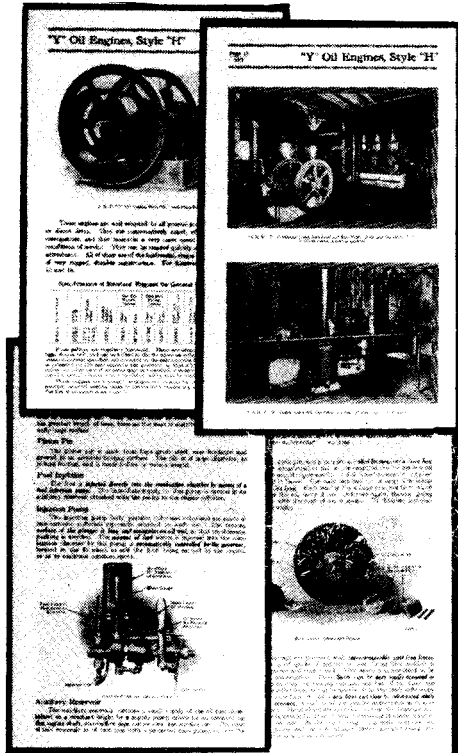
Cat. no. 1185

\$10.00

Lindsay Publications Inc, PO Box 12, Bradley IL 60915-0012

# Old Engines!

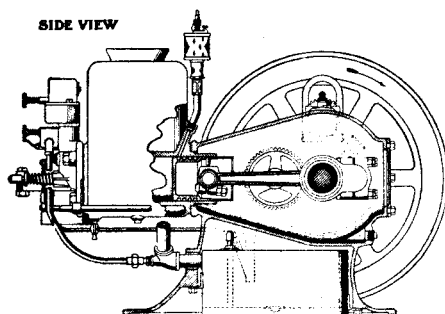
# PORTER MFG CATALOGS!



## FAIRBANKS-MORSE "Y" OIL ENGINES by Fairbanks, Morse & Co.

Fire up one of these monsters, and you will have done something! We're talking about 10 to 25 hp one-lung engines from 1922 that weighed from 3400 to 8100 pounds! The big machine drove a 5' diameter flywheel at 325 rpm max. Since this is a sales booklet you'll see these machines driving pumps, machine shops, dynamos and the like. You'll see the piston, con rod, and more. Very interesting. 5½x8½ booklet 22 pages  
Cat. no. 1230

\$3.00

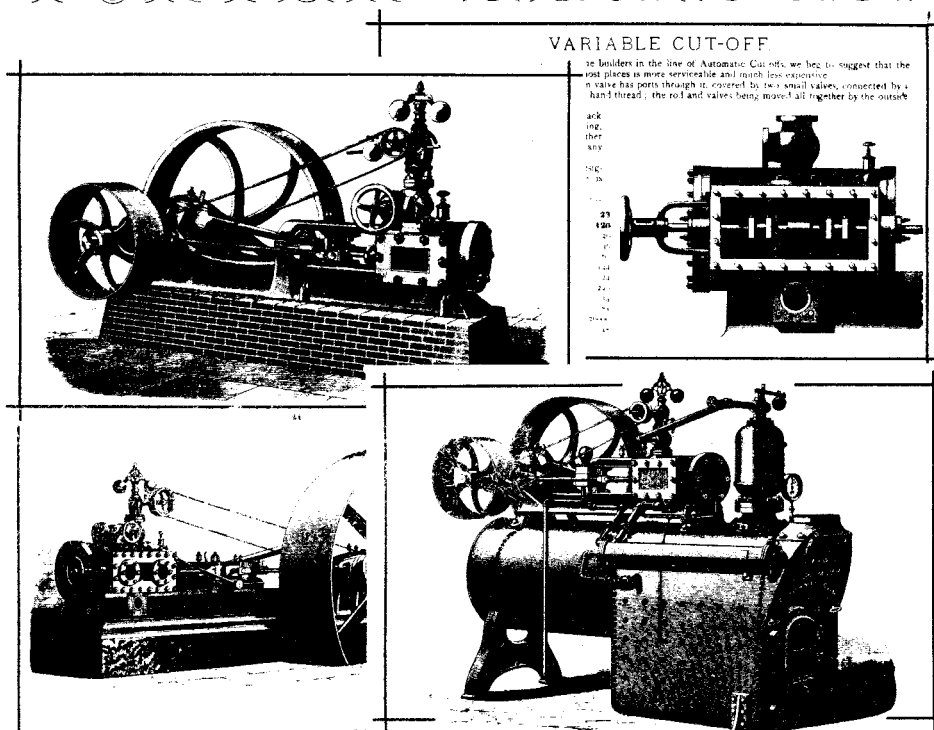


Gift of Motor, Wizer, Piston and Connecting Rods, Frank P. Olin, Etc.

## MOGUL KEROSENE ENGINES by International Harvester

You'll find interesting drawings, cutaways, and instructions for setting up and running the Mogul horizontal one-lung engines in the 1 to 2½ hp sizes. These babies burned kerosene or motor spirits, were fired with a magneto, and were water hopper cooled. They're typical of the one-lungers you see at summer tractor meets and in museums. This information should be useful for the restorer, model builder or enthusiast. 23 pages 5½x8½ booklet heavily illustrated  
Cat. no. 1229

\$2.50



## PORTER MFG CATALOG 1884 reprinted by Lindsay Publications

Don't pass this up! It's a gem. You should have this beautifully illustrated catalog of steam engines and boilers. Not only is this just plain fun to look at, but you'll discover many high-speed Porter engines which are as rare as hen's teeth today (only about three left).

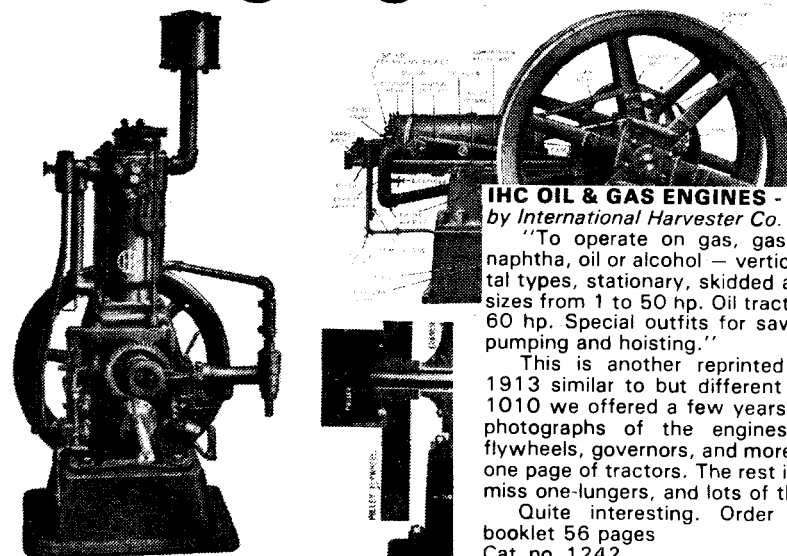
Located in Syracuse, NY, the Porter Mfg. Co., Ltd. produced the centre crank portable engine and boiler in sizes from 6 to 50 horsepower, the largest with a 6' diameter flywheel. And there's the 7x10 and 8x10 agricultural engines, the centre crank engine on wheels, the old economizer in 2½ to 8 horsepower sizes, and a variety of stationary

boilers. See upright boilers, the trunk bed engines up to 12 horsepower, centre crank stationary engines up to 35 horsepower, square bed engines, variable cut-off engines, double cylinder engines, single and double sawmills, a steam pump, a power pump, an upright heater, a horizontal heater, and lots of specifications.

This is beautifully illustrated and is the nuts for model builders, steam freak and especially historians of technology. This Porter may be somehow related to Charles T. Porter, the high speed steam engine wizard. It's worth researching. You'll like this. 8x6 paperback 44 pages — super illustrations  
Cat. No. 4295

\$4.75

# One lung engines! From 1913



## IHC OIL & GAS ENGINES - 1913

by International Harvester Co. of American

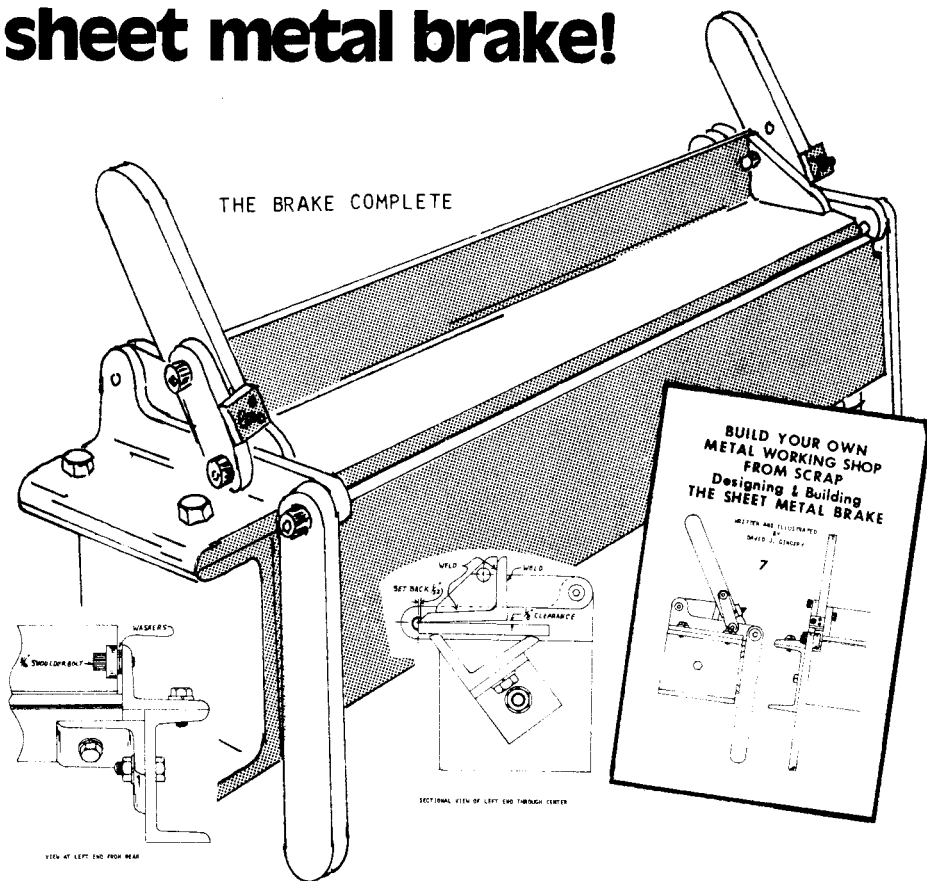
"To operate on gas, gasoline, benzene, naphtha, oil or alcohol — vertical and horizontal types, stationary, skidded and portable — sizes from 1 to 50 hp. Oil tractors from 12 to 60 hp. Special outfits for sawing, spraying, pumping and hoisting."

This is another reprinted catalog from 1913 similar to but different from Cat. no. 1010 we offered a few years ago. Beautiful photographs of the engines, carburetors, flywheels, governors, and more. There is only one page of tractors. The rest is the ol' hit-or-miss one-lungers, and lots of them.

Quite interesting. Order one. 8½x11 booklet 56 pages  
Cat. no. 1242

\$5.00

# Build a professional quality sheet metal brake!



## SHEET METAL BRAKE

by Dave Gingery

Working sheet metal without a brake is tough, to say the least. With a brake you can make electronic chassis, flashing for your house, boxes for tools and supplies—you name it. Dave told me he has built many over the years, some of which are still being used in industry.

This is the first book off the press, and the brake design is a beauty. Inside this 52 page paperback you'll find drawings, parts lists, how-to, dimensions

and everything you need to know including tips on using the brake when completed. You get far more than just plans — you get a thorough education on building a brake.

Some of the people who have purchased the earliest copies have written to say "that's my kind of book." You don't often see good plans for a brake, so I suggest you order a copy today. 52 pages 6x9 paperback No. 161 \$6.95

## DON'T THUMB YOUR NOSE AT ALUMINUM!

If you were to walk into a store and were to see a castiron bench vise sitting next to an aluminum one, you'd buy the castiron version, even if the aluminum model were selling at half the cost. But you never see aluminum vises. Why not? Is aluminum inferior?

The reason is the cost of material. If you were casting vises for a living, no way could you scrounge up enough free scrap to turn out hundreds of vises. You would buy ingots or scrap. You'd learn in a hurry that castiron is much cheaper than aluminum. You could put a smaller price tag on the iron vise, and that would make them sell. Aluminum is actually superior to castiron in many ways, but it's more expensive.

Need more proof? Consider this. If you want to pay extra, you can buy aluminum pipe wrenches instead of castiron. They'll do the same job, and they're so much easier to use when hanging pipe overhead.

There's a new tin-aluminum alloy on the market that surpasses castiron in almost

every respect. Yet it melts at 1000° F. The only problem is that it is more expensive than iron.

Castiron is superior for bearing surfaces because of the graphite embedded in its grain structure. If you need a bearing, bore the aluminum and press in a \$1.50 bronze bushing. That's even better.

Cost is no problem for us. We need only small quantities of metal, so we can accumulate scrap metal. When you consider that aluminum is in many ways superior to castiron, and is almost free if you want to spend the time to pick it up, it's foolish not to put it to extensive use.

Castiron has its place, and I want to pour it someday. But it pours at 2800° F, and that's dangerous. I'll "cut my teeth" on aluminum, and learn all the tricks of sand casting BEFORE I try the hot stuff. You should do the same. Ask Gingery. Ask Ammen. Ask anyone who's done it.

The moral of the story: Don't thumb your nose at aluminum!

## Discover the Dave Gingery books!



Meet Dave Gingery. Over the past twenty years or so he has built dozens of lathes and other machine tools from scrap simply because he had no money to spend on such expensive equipment.

One day he approached me about publishing some books on building machine tools from scrap for practically nothing for the guy who'd love to buy a lathe but is broke — in other words, most of us. I said I was interested, but as usual, a little skeptical.

When the first book in the series came out a year ago, I was amazed. As each new book appears, my amazement grows. This guy is really on to something!

The point he is proving is that you can start with simple handtools and build precision equipment just like they did in the old days. First, you set up a simple foundry, next build a lathe. You use the lathe to build the shaper which can cut the dovetails, T-slots, and gears for the milling machine. Then you can build the drill press. A sheet metal brake is thrown in for good measure. Finally, you can go back and put all those accessories on your lathe: dividing head, screw-cutting gears, chucks, and the rest.

I said, "I'll believe it when I see it!" I've seen it, but I still can't believe it. No one else can either. It's like magic. Give this guy a file, your aluminum storm door, and some charcoal, and he turns it into a precision lathe!

Thank God he's teaching us his tricks. This series of books tells all. As you build the machines in the series, Dave teaches you new skills in patternmaking and molding, in mechanics, and in machining. When you're done, you end up with a complete machine shop that you've built, that you can use expertly, and you can repair should something go wrong.

It's a trade school for do-it-yourselfers. I've never seen a series of books like this, and I don't think I ever will again.

All of this may make me sound like a sideshow barker, but what I say here is what I honestly believe. Otherwise I wouldn't be devoting so much space to his books in this catalog.

Get a copy of Charcoal Foundry. You can't afford not to. If you EVER expect to use a lathe or other machine tools, then pick up the other books as soon as you can.

# Melt aluminum with charcoal!

## Pour castings! Incredible book shows how!



### CHARCOAL FOUNDRY

by Dave Gingery

You can melt aluminum, pot metal, and even brass with a very simple furnace using grocery store charcoal as fuel! In a very few minutes you can melt beer cans, your wife's pots and pans, the siding off your neighbor's house, the pistons out of your car, and anything else you can beg, borrow, or steal. It costs very little to build the equipment, and it works incredibly well.

All you need is an old metal 5-gallon pail, about \$6 worth of fireclay, some sand, a junk auto heater fan with a coffee can shroud (or a vacuum cleaner), and this book to build a high temperature furnace. My brother built the furnace itself for about \$7. The blower, cords, a pipe for a crucible, and the rest cost a few dollars more, but I can't imagine that the whole set up being more than \$25 — probably much less.

Some sandbox sand and fireclay will do very well for making sand castings. And all you need are some 1x4's and a few nails to

build a cope and drag to make your molds. You wouldn't believe how easy it is to build a complete foundry.

After making a pattern (something that takes some skill), I rammed up a sand mold and fired up the furnace. In went the crucible around which I placed about 75¢ worth of charcoal briquettes. Into the crucible went beverage cans, an old electric iron, and a couple of pistons. After skimming off the dross, I poured the 1400° F metal into the sand mold. About 20 minutes later, I had a face plate casting for a small lathe. Since then I've made lots more castings, and you can too.

This is the first book in Gingery's series showing you how to build a complete metal working shop for almost nothing. You must have the foundry setup in order to build the lathe, milling machine and other tools described in each of the other books. Castings make strong and precise machine tools. You'd go broke buying the castings (if they were available), but you can make them for almost nothing with this setup.

Building machine tools takes hours and hours, but building the charcoal foundry is far simpler, and loads of fun. You can make castings for any purpose. Anyone can build a furnace, and almost everyone will become hooked on melting metal once they try it.

The "Charcoal Foundry" is a small book with a big price tag, but it's worth every penny, and then some. Every page is loaded with practical how-to useful advice. This 1983 revised edition contains many, many drawings and many excellent photographs that will show you step-by-step how to build a foundry.

Highest recommendation! Top rate! Get a copy. 5½ x 8½ paperback 80 pages  
Cat no. 163 \$6.95



Melt metal and pour custom castings in your own homebuilt foundry! It's easy, low in cost, and relatively safe to do. Recycle metal. Make castings for your machine projects. Make decorative castings for sale! This is a tool that is limited only by your imagination. "Charcoal Foundry" will get you started! Order a copy today!



# Build a precision metal lathe for less than fifty dollars!

## Build a METAL LATHE

Dave Gingery

You can build a sturdy, precision metal cutting lathe for much less money than you'd pay for one of those "toy" lathes on the market. And you can do it without precision measuring equipment other than a feeler gauge, and without other machine tools. Dave built two prototypes for less than \$50 each!

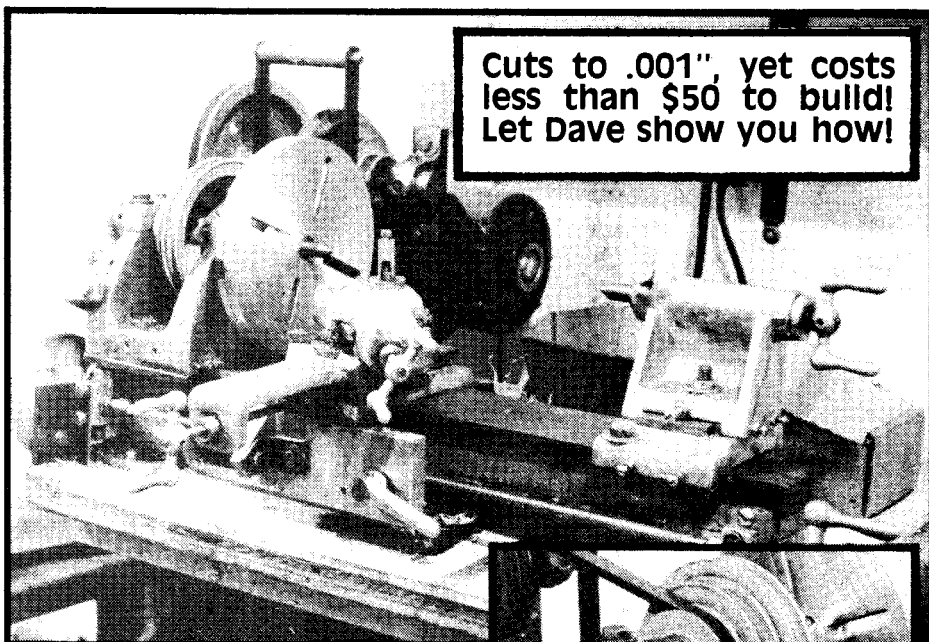
You end up with a solid lathe with 7" swing over the bed, about 5" over the saddle with 12" between centers. You can bore the headstock spindle and tailstock to No. 1 Morse taper if you wish. The size is limited by the size of the charcoal foundry which you must have to build this. A larger lathe would need bigger castings for rigidity, but you could probably scale this machine up with few problems.

I had a chance to use one of the prototypes. After a pass across an 8" long steel bar, my micrometer showed a taper of less than .001". Not bad for a \$50 lathe!

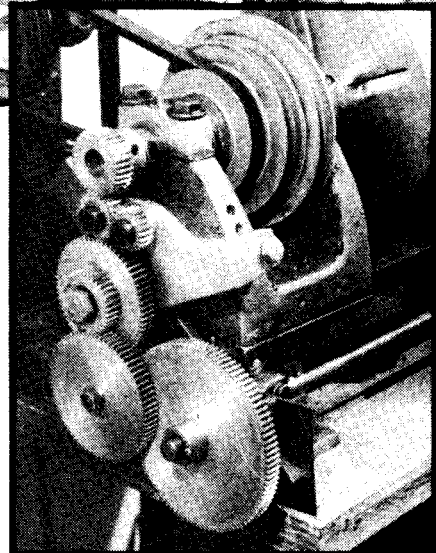
The key to the process is the charcoal foundry. Castings are the secret of building a quality machine. The only tools needed are an electric drill, files, and other handtools along with a simple homemade disc grinder fully described in the book. A table saw is very handy for making patterns, but you could probably borrow one or do without if you had to.

You get no chuck or screwcutting gears. Those are described in Dave's book on deluxe accessories. They make life easy, but they're not absolutely essential. This simple lathe was all that was needed to produce the metal shaper, milling machine, drill press and the dividing head, all described in other books. If this lathe were a toy, or weren't genuinely useful, then it's unlikely that these other precise machines could ever have been built.

Can't afford a lathe? Then build one. It doesn't take much money, just lots of hours. Great book. No two ways about it. 5½x8½ paperback 128 pages heavily illustrated  
Cat no. 177 \$7.95



**You CAN build a precision lathe! And you don't need another lathe, or any other precision tool! It's true!**



# Build a quality metal shaper!

## Build a METAL SHAPER

by Dave Gingery

You may have heard the shapers are obsolete. Maybe. Maybe not.

Truth is there is hardly a cheaper, quicker way to cut keyways, splines, gears, flat and angular surfaces, dovetail slides, irregular profiles and more. Most of this can be done on a milling machine, but often the milling machine must use an expensive cutter. A shaper, for instance, can use a 50¢ piece of tool steel to cut gears. No expensive cutters are needed.

This third book will show you how to build an excellent metal shaper featuring a 6" maximum stroke and a mean capacity of 5" by 5". The tool head rotates through 180 degrees for angular cuts, and features a graduated collar with a simple lock. Down feed has a graduated collar, and exact stroke length can be set.

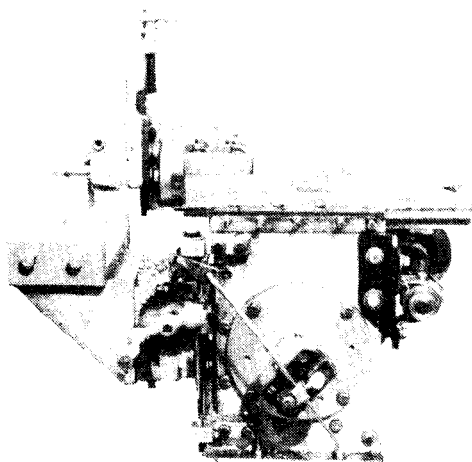
When you add these features to the inexpensive lathe bits it uses, and when you consider that it has variable speed, automatic variable cross feed and adjustable stroke length, you can see how versatile a machine

this really is.

When Dave finished his prototype months ago, he wrote, "The shaper is finished, and it surpasses my wildest hopes. The automatic feed works beautifully. The adjustable stroke mechanism is smooth, quiet, and easy to adjust. The box slides are all ample, and I see no signs of yield in any of the members, even when taking a cut as deep as .100".

There were plenty of areas that could have been a problem in the final tests, but the first setup was perfect and she went right to work to plane off the surface of the table. Test cuts were made while rotating the step pulley by hand. Even at that point I know it was a winner for the cutter passed smoothly, without chatter. . . ."

In this book you get detailed drawings showing all the patterns, even the split patterns. You'll need the charcoal foundry and the metal lathe already built. Like Gingery's other books, this one is jam-packed how-to. Great book! Get a copy for reference if nothing else. 5½x8½ paperback 144 pages heavily illustrated  
Cat no. 187 \$7.95



# Gingery's Machine Tools Perform!

## GINGERY'S MACHINE TOOLS PERFORM!

I've heard all kinds of crazy criticism. One book reviewer in a British magazine after reading Dave's books flatly stated that any machine tool built of aluminum couldn't possibly be any good. That's a bunch of bull. With proper design and construction aluminum will do anything that cheaper castiron will do (except maybe for bearing surfaces).

But the more usual complaints I hear are "The tools are too small." -or- "It's too hard to make the castings." And both of these comments are bull, too! With a little imagination you can make Dave's machine tools handle surprisingly large work. And the hardest part of making the castings, or building the machines for that matter, is inertia — just getting off your behind and getting started.

It's true that building machine tools takes time. But each step is relatively easy. Just getting started is the toughest part. If you work just an hour each night, you'll be surprised how much you can accomplish in just a few weeks.

Another advantage to building your own machine tools is that you learn how to work metal as you go along. In effect, Dave's series of books will teach you everything from filing and scraping to machining. When you've completed a machine tool, you will have learned by doing with Dave as your teacher.

The best thing is as you build a tool, you'll come up with your own ideas on improvements and simplifications. When you complete the lathe, for instance, you'll prob-

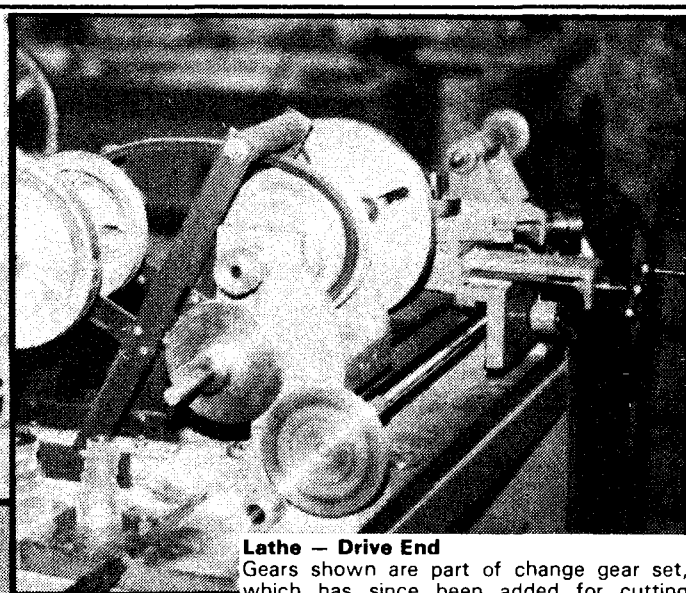
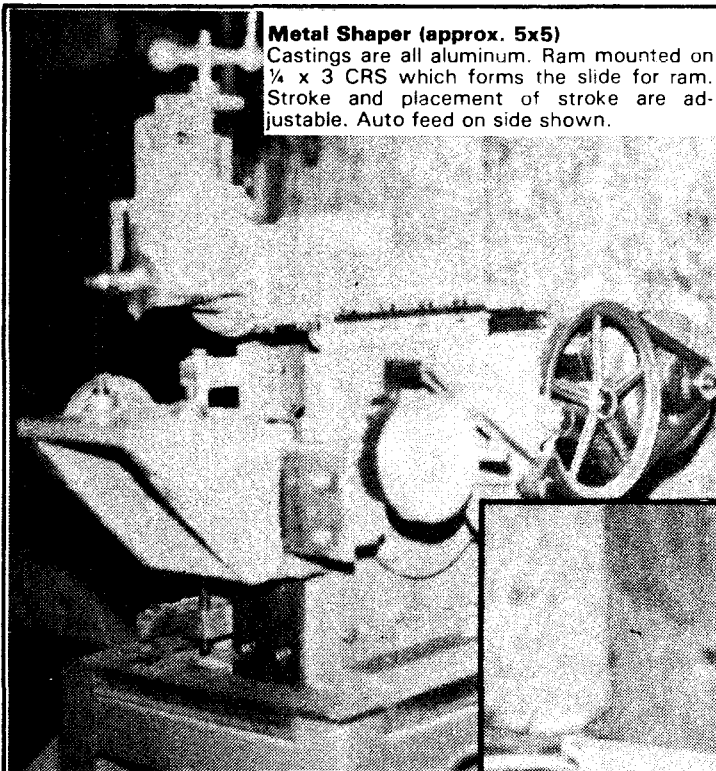
bably be itching to build one twice the size with all kinds of fancy accessories that you've devised. The process of construction opens up a whole new world.

Look at the machines shown here. They're based on Dave Gingery's books with improvements and ideas thrown in. They're custom machines capable of top rate work, that were not only fun to build, but are now fun to use. Imagine the pride you'd feel showing a complete machine shop that you built by hand.

If you haven't picked up Dave's incredible series of books, and, more importantly, if you haven't tried your hand at building, then get going. Get started. You'll be glad you did.

### Metal Shaper (approx. 5x5)

Castings are all aluminum. Ram mounted on 1/4 x 3 CRS which forms the slide for ram. Stroke and placement of stroke are adjustable. Auto feed on side shown.



### Lathe — Drive End

Gears shown are part of change gear set, which has since been added for cutting threads and auto carriage feed. Gears were made on miller of zinc-alum alloy.

Do Dave Gingery's machine tools really work?

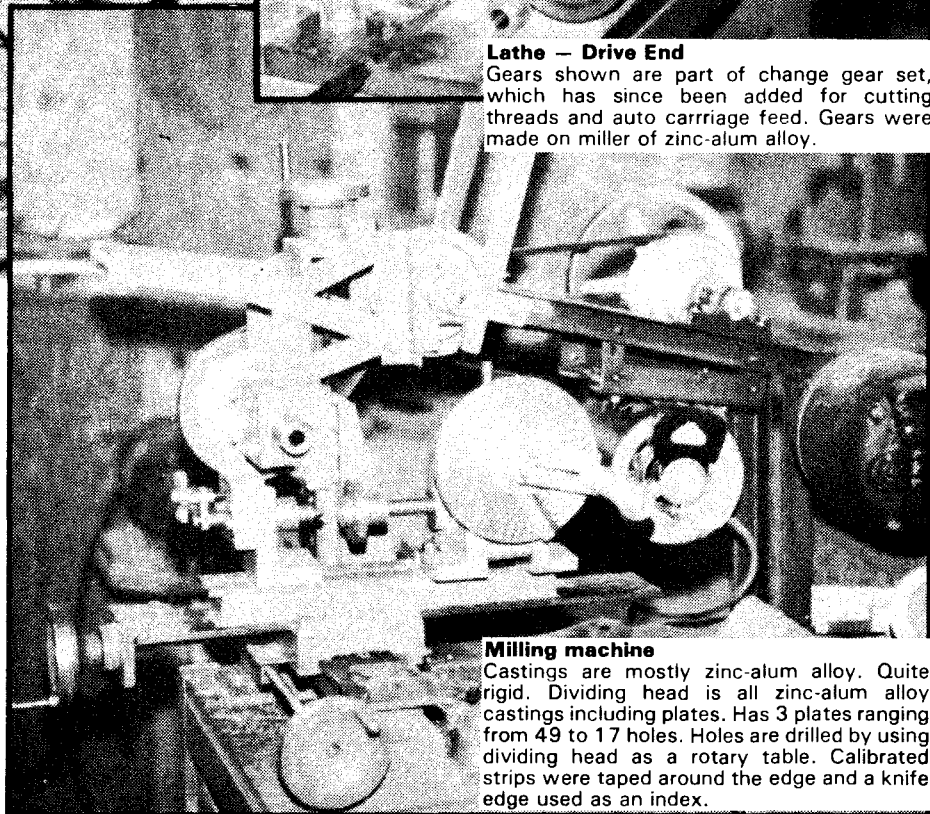
You bet they do! Dave's machine tools are real tools, not toys or models. They're for real.

Dave received a packet of photos and a letter from Don Lewis of Guelph, Ontario, which both have agreed to share with us:

"Just a few lines from a fellow workshopper to let you know how much I have enjoyed the building of the machines that you designed.

"I started with the charcoal foundry, then graduated to a furnace built of angle and firebrick, which I found much easier to use. I hinged the bottom and the lid, so that I could fill and dump easily. I now use an electric furnace built along your design, built into a 5 gallon pail. I cast soley zinc-aluminum alloy now. (12% alum) which I find much superior to aluminum.

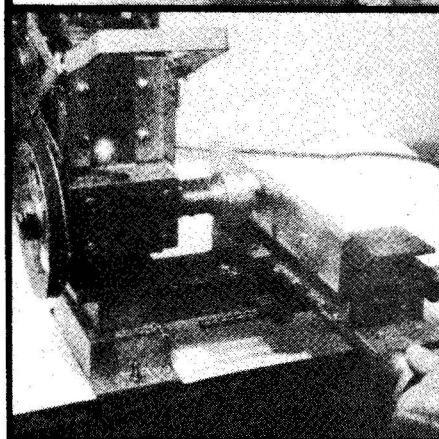
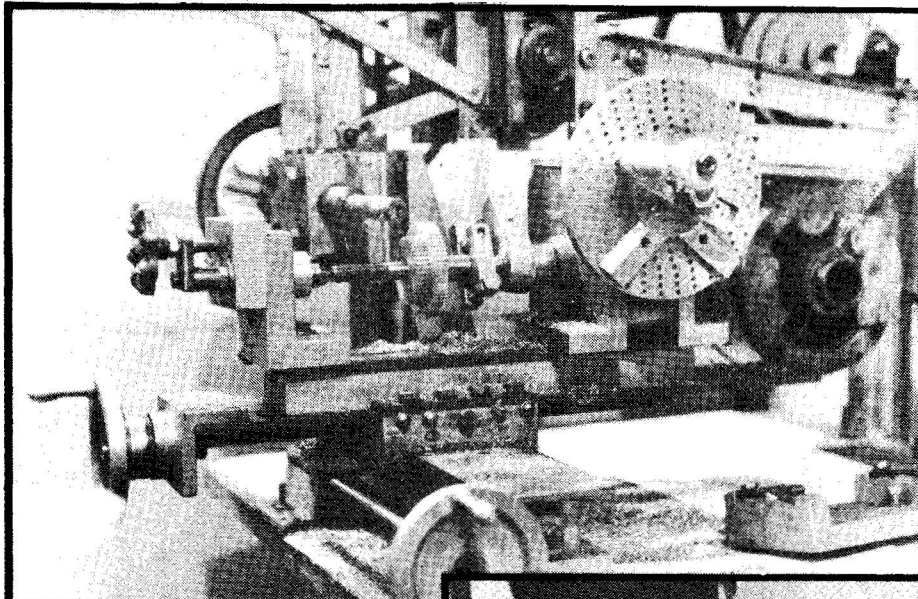
"I stuck almost 100% to your plans and methods. "Just polished off the lathe steady rest today — turned out very well. Have also finished all the gears for the lathe."



### Milling machine

Castings are mostly zinc-alum alloy. Quite rigid. Dividing head is all zinc-alum alloy castings including plates. Has 3 plates ranging from 49 to 17 holes. Holes are drilled by using dividing head as a rotary table. Calibrated strips were taped around the edge and a knife edge used as an index.

# Build a precision milling machine!



## MILLING MACHINE

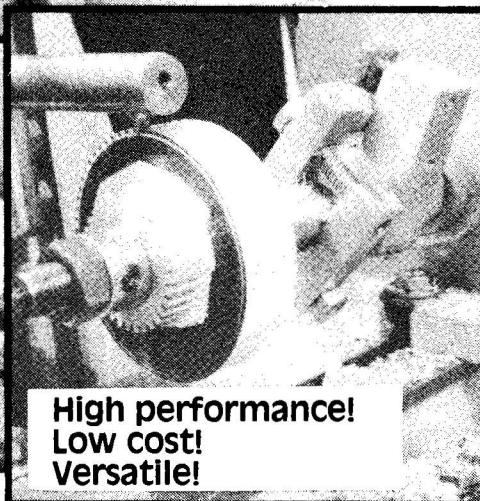
by Dave Gingery

Dave can tell the story best:

"It took over a month to design the transmission, and it works beautifully! Eight speeds ranging from 43 rpm to over 2430 rpm. I know of no other small miller except the Dore-Westbury that has such a range. . . The highest speed in the low range is 270 rpm, and it made a .035" cut in the end of the compound with the face mill at 3" diameter at that speed. No squawk or chatter. . .

I made the cutter on the lathe, but the miller is designed to make its own cutters for nearly every purpose. This one adjusts from 2 1/2" to 4 1/2". It's an aluminum casting, and it was cast with a steel core to leave the slot for the cutter bit. It shows no sign of failure after planing off the end of the compound. The set screws didn't loosen, and the casting wasn't strained in the least amount. That's after several passes over a sandwich of 1/4" steel top and bottom, and an inch of aluminum between.

It's a horizontal miller, but it has the full range of vertical mill capability when used



**High performance!  
Low cost!  
Versatile!**

with the angle plate on the work table.

The work table 2 3/8" x 12", with a 3/8" T slot, and it travels a full 12". The carriage travels 6 1/2" with the tail stand in use, and 8 1/2" with it cleared away.

Home shops will find a horizontal mill and a shaper to be not so nearly obsolete as the "experts" say, and even the smallest shop would soon outgrow one of those little toy vertical mills.

Anything is possible. It can make any jigs or fixtures that are needed for any kind of work. It can make any type or style of cutter. You could even machine a blank or a Brown & Sharpe gear cutter, mill the lands, and grind the cutter right on the miller.

I'm really excited about this machine. It's much more than I thought possible when I began."

Build yourself a miller. If you've seen any of Dave's other books, then you know what's here — quality how-to. Worth twice the price.

5 1/2 x 8 1/2 well over 150 pages — largest book yet.

No. 1128

\$7.95



# Build a top quality drill press!

## THE DRILL PRESS

by Dave Gingery

What a beauty! It may be homemade, but it looks professional and works even better. Dave can tell you about it better than I can.

"I can't believe the capability of this machine. I put a 5/8" bit in the chuck, and it drilled through a 1/4" steel channel without a pilot hole. My wife said it looked like it was cutting cheese instead of steel.

Note the double reduction that gives a low speed of 260 rpm. That's why it can drill large holes in steel. I'm certain it can drill a 3/4" hole, and it may be capable of drilling up to a 1" in steel. I don't have a larger bit to test. All of the small drill presses that I've seen have a low speed around 700 rpm. That means they only have a capacity of 3/8" in steel, even if they do have a 1/2" chuck.

"The spindle is mounted in ball bearings, and so is the countershaft for the double reduction. The driven pulley is mounted on a hollow shaft, supported by its own 1" ball bearings to run concentric with the spindle. No belt tension is transferred to the spindle.

The quill feed is 2 1/2", and it can be made longer. The quill is advanced by a unique cable winch mechanism. This is only a 1/16" cable, though it had ample strength to feed the 5/8" bit to produce a closely curled chip. It has provisions to adjust tension and backlash, which is very important for sensitive drilling with small bits at high speed.

Mine is an 11" machine, but the one in the manual will be a 12". It can easily be scaled down about 1/3 or smaller, and it can be scaled up to a hefty floor model with ease. None of the castings used the full one quart capacity, and all of them were machined on the homemade lathe. Only the spline on the spindle was done on the miller."

Another winner. What more can I add? Except, get a copy!

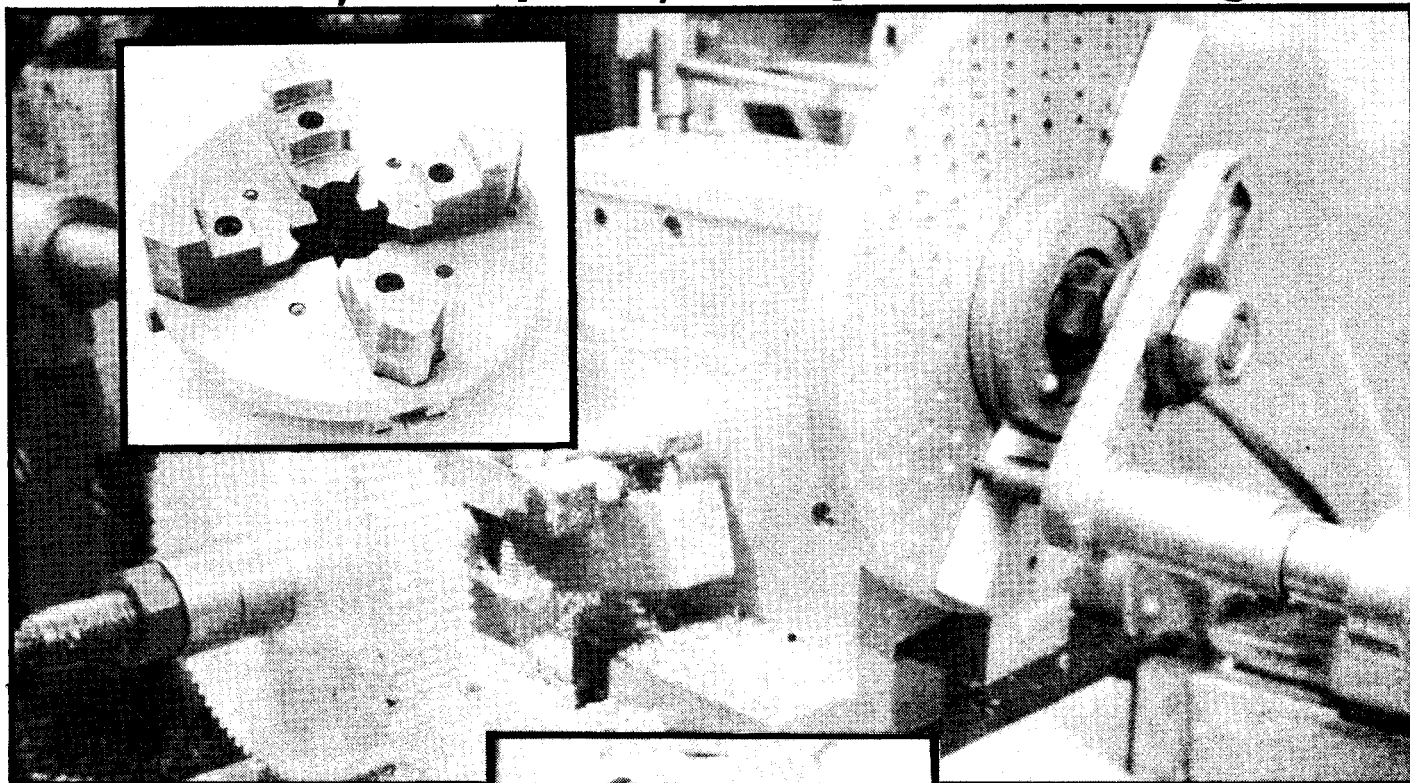
5 1/2 x 8 1/2 128 pages illustrated — top quality as usual

Cat. No. 1133

\$7.95

# DELUXE LATHE ACCESSORIES!

Build chucks, steady rest, rotary table/indexing head!



## DIVIDING HEAD & DELUXE ACCESSORIES

by Dave Gingery

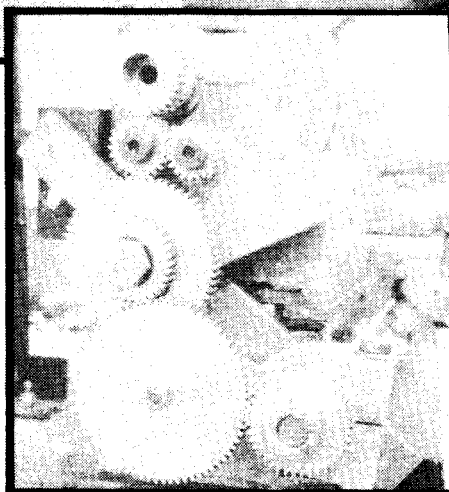
By now you've learned how to melt scrap aluminum with charcoal to pour all the castings that go into building the lathe, shaper, milling machine, and the drill press. You've built a whole shop of precision metal working tools for very little money. With these tools we can now go back and build the deluxe lathe accessories that cost so much to buy.

Chapter one covers "Tooling Up." You get a list of supply sources and helpful books, a review of basic tooling, and a series of simple lathe tools: compact clamp dog, heavier face plate, homemade hand reamers, set screw chuck, expanding and threaded mandrels for facing gear blanks and cutting teeth, plus a simple fixture for tapping truly perpendicular holes by hand.

The second chapter will show you how to build a simple two jaw chuck that can be self-centering for repetitive work. You'll get complete directions for building a four jaw chuck with independent reversible jaws. Like Dave says, "You'll be glad you didn't blow your bait and beer money on a chuck when you see how easy it is to build one." There are only two simple castings for the main body.

Next comes a chapter on building a steady rest. This almost-essential accessory expands the capacity of the lathe for work that is too long to be mounted between centers. It's worth many times its small cost.

Ahah! Chapter four will show you how to build the dividing head, but it's actually a rotary table too. Few home shops have such an accessory, but you will for very little money. This beauty is built around a standard worm with a 40 tooth worm gear, providing all divisions through 50 and all even and mul-



tiples of 5 through 100. Many other divisions up to 1960 are possible, and it's easy to make a special plate for an unusual job. You'll be shown how it works, why it's so accurate, how to build it and use it. The directions for drilling the fraction plates are especially valuable because they can be adapted to building a variety of other indexing fixtures.

We're not done yet! Chapter five will show you how to make gears that look as good as their commercial cousins, and that mesh smoothly with them. You'll see that it's easy to machine the blanks to correct size and mill the tooth spaces. You don't need expensive cutters. Dave will show you how to make your own for half a dollar! If you want, you can mount six or eight in a row and machine them all at once — without complicated math or exotic equipment. This is what you need to machine change gears for the lathe.

Finally, you'll be shown how to add the change gears to the lathe. Chapter six shows you how to convert your lathe to complete machine. A conventional tumbler plate provides left hand thread cutting, while the basic set of gears cuts all threads of standard inch sizes from 8 tpi to 80. A fine feed range from .0025" per revolution to .005" is also provided. You even get a threading indicator for the carriage so that you can engage the split nut at the proper moment. It really is easy to add change gears once you know how, and Dave will show you as he has done in all his other books.

By now you're probably thinking that even though you may have a complete lathe, building the indexing head, cutting gears, or any of the other accessories is worth the price of the book alone! You're right! This book is worth three times the price. You don't believe me? Have you priced a rotary table? An indexing head? Even the simplest gears?

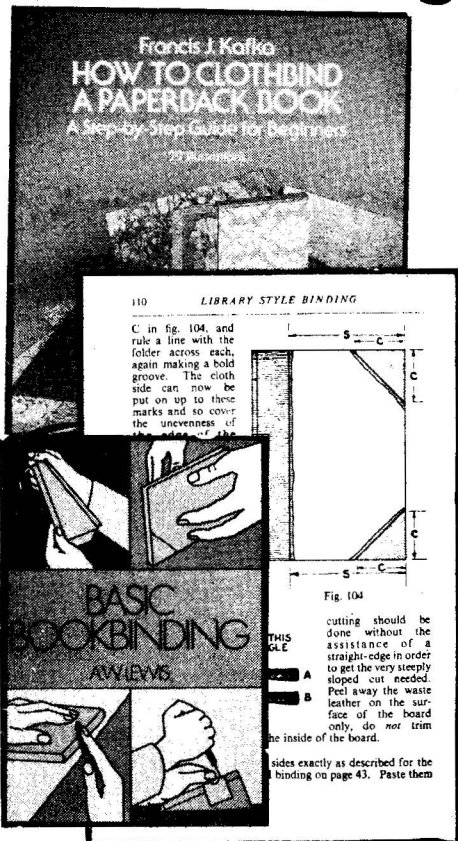
Plans for backgearing and follower rest have not been included as originally planned. The book is too big as is. This may be the last book in Dave's home shop series, but it's likely we'll be hearing from Dave in other books in the future. Maybe these projects will appear there.

That's the story. If you don't see by now just how valuable this book is (the one that everyone has been waiting for) then I give up. There's just no hope for you. I showed some gears that Dave machined to some women I know who don't know a lathe from a hockey puck, and they couldn't believe something so precise was homemade. You don't have to be an expert to know a good thing when you see it. Get a copy of this. Outstanding!

5 1/2 x 8 1/2 paperback  
Cat no. 1153

\$8.95

# Book Binding



## BASIC BOOKBINDING

by A. W. Lewis

Bookbinding is a centuries-old skill that every book freak (that means you and me) should try. I've done it, and it's like making paper. It's not all that complicated, but you get great satisfaction turning out a hardcover book. And you'll find people are amazed that you can bind your own books when you show them the finished product.

There are all kinds of binding books on the market. This is probably not the best, but it's so inexpensive, everyone can afford a copy. And you should try it. What special equipment you need, you can make. I bound my few books with materials from a yard goods store.

Here you'll learn how to bind books from scratch, rebind favorite old books, put a hardcover binding on single sheets, decoration techniques and all the rest. It takes time to bind a book, but it's fun. Try it. 5½x8½ paperback 144 pages

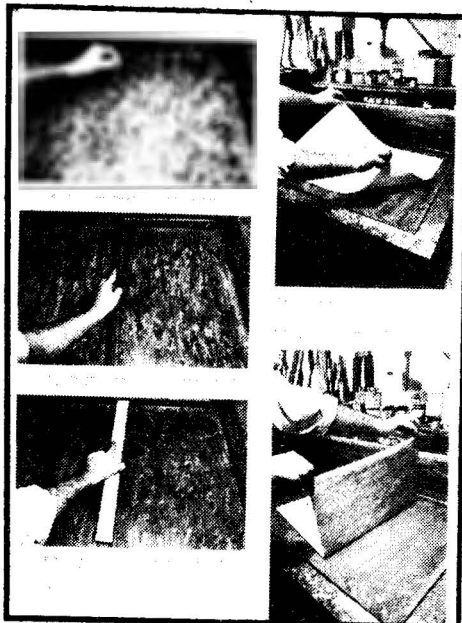
Cat. no. 436 \$2.75

## HOW TO CLOTHBIND A PAPERBACK BOOK

by Francis J. Kafka

To keep costs down, most books published these days are paperbacks. But paperbacks don't stand up to heavy use. Librarians hate 'em. If you have a favorite paperback book that you want to preserve or intend to use frequently, convert it into a hardcover. You get all the details in this booklet — the few pieces of special equipment (easily made at home), the techniques, and the materials. Not only does this have practical value for book-crazies like you and me, but bookbinding is a fine art that is just plain fun to do. You get a great sense of pride when you tell people "I bound this book". Try it. Dirt cheap information. 8½x11 booklet 26 pages

Cat. no. 435 \$2.95



# You can Marleize Paper

## HOW TO MARBLEIZE PAPER

by Gabriele Grunebaum

I'm sure you've seen those fancy swirling color patterns on papers found most often in the inside bindings of quality books. Each sheet is handmade by a process called marbling. Paints are floated on a special water solution, and then swirled. A sheet of paper is then floated on the paint layer and pulled off. Every sheet is different.

You'll learn what tools, colors, and "grounds" you'll need. And you'll be shown how to make twelve different beautiful designs. Marbleized paper has been used to decorate books, boxes, lampshades, handbags (?), shirts (?) and other things. This is something that sounds like fun to try. Not only are the materials inexpensive, but so is this book. Get a copy and see what you can do. 8½x11 booklet 32 pages

Cat. No. 450 \$2.50

# Make your own paper!



## The Art & Craft of HANDMADE PAPER

by Vance Studley

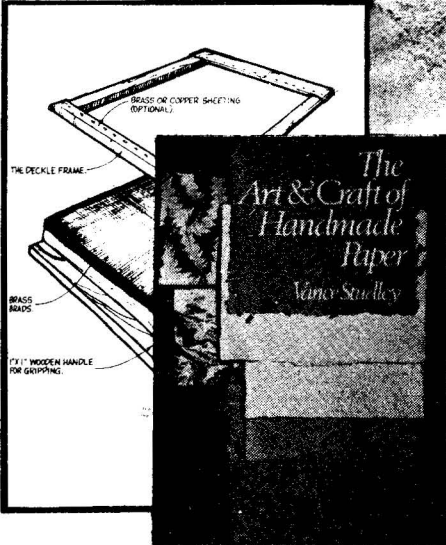
Paper is so common that we don't even appreciate it. Have you ever made any? Why not? You'd be surprised how satisfying it is to pull that mold out of the vat, watch the water drain, then couch that glistening waterleaf onto felts, and press it, and then see a real sheet of paper!

I've made lots of paper. It's a lot of work, but the paper you make is just not available commercially. My favorite stock is recycled cardboard cartons which produces a very strong thick soft medium brown paper that has a warm, soft feel like a pair of well worn bluejeans! Is it ever nice paper! I've printed on it with a small hand press, sold it as stationery, made stamp and photo albums out of it.

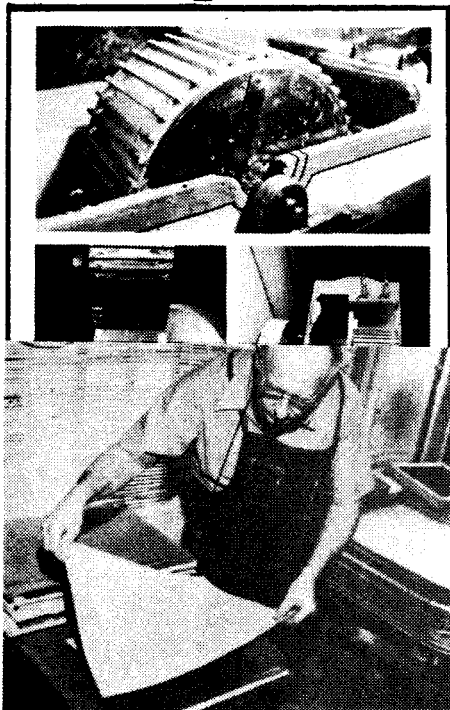
Studley will show you how to make the pulp out of anything from old rags to straw to lawn clippings to cattails. He'll show you how to press it, make paper castings, laminate and do other artistic things. You'll learn how to size and marble paper.

Papermaking is ancient art, and you should try it. The equipment you need is simple and most of it can be borrowed or built, meaning you need little investment. Try it! Send me a sample of your paper. It's fun. 8½ x 11 paperback 112 pages

Cat. No. 43 \$13.95



# Make Paper!



## PAPERMAKING

by Jules Heller

"How to make handmade paper for print-making, drawing, painting, relief and cast forms, book arts, and mixed media." From that you should see that this book was written for artists.

But you don't have to be an artist to enjoy making paper.

Making paper is messy (water and pulp all over the place) but it's simple and loads of fun. I love it. There's nothing quite like recycling paper into new sheets or turning raw fibers like rags or straw into interesting unique paper. You start with something so simple and turn it into something so useful, that the process is almost amazing.

And you'll find that this is a dynamite book! Chapters include what is paper?, 2000 year old approach, Simplest ways to make paper, Workshop and equipment, and Papermakers and mills. The second part covers variations in papermaking, problems and solutions, experimental approaches, recycling and unusual papers, cast paper, papermaking for schools, and more.

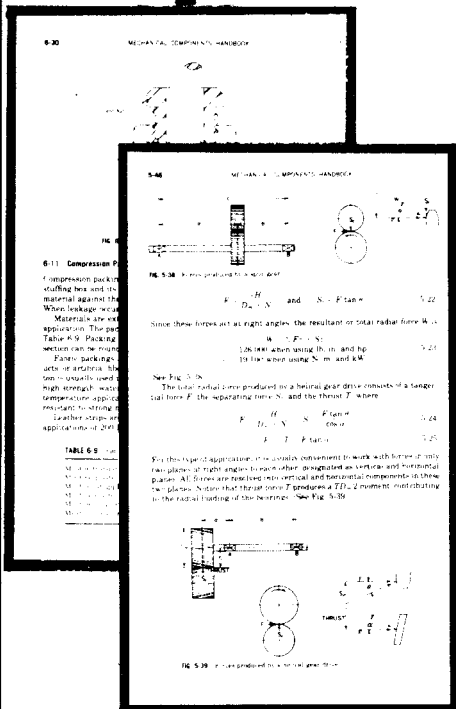
You get great details on homemade hollander beaters, a homemade hydropulper, vats, molds and much more. I've read a lot of papermaking books, so a lot of this (for me anyway) is repeat. But there's much new material: great new ideas, great details on what other papermakers have done.

This is an oldtime craft that you should try at least once. And you can! You don't need much more than a kitchen blender and a piece of window screen. But I must warn you. Making paper is addictive. You'll find out why interest in this craft has grown by leaps and bounds over the past decade.

Great book. Well illustrated. Loaded with details. 1978 copyright. 9x12 hardcover 216 pages  
Cat. no. 456

\$27.50

# Mechanical Components



## MECHANICAL COMPONENTS HANDBOOK

by Robert O. Parmley

If you design machines, consider this carefully. It's very expensive, but does it ever deliver! Here's what they say on the dust jacket:

"This authoritative volume helps designers, engineers, machinists, and technicians solve any common mechanical or design problem. A comprehensive, hands-on reference, it is the first engineering handbook entirely devoted to the in-depth functional analysis of all important mechanical components today.

Since no engineer or designer can be a specialist in every area of today's vast technology, this treasure chest of practical information and ideas can help bridge the gap between knowing what has to be done and finding the right components to do it.

A fastening problem that cannot be solved by a conventional solution using threaded connectors: Turn to Section 11 - Retaining Rings - and find a wide range of applications and pictorial solutions to help select the proper design and size.

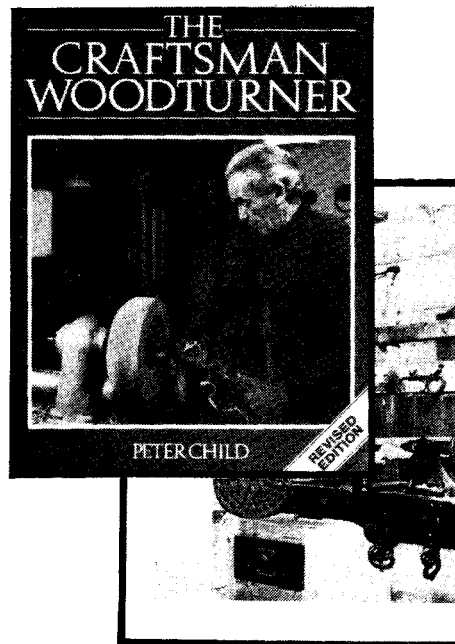
A complex mechanical problem of economically pinning two mechanical components together: Turn to Section 14 - Innovative Design - and find diagrammed layouts of numerous connected components using inexpensive stock pins.

A shaft seal in a recently developed machine is having too many service problems: Turn to Section 6 - Seals and Packings - and find examples in text with clarifying drawings that can be adapted to the situation.

You'll find chapters on shafts and couplings, bearings, springs, hose fittings, locking components, chains and sprockets, gears and gearing, and much more. It's loaded with valuable information. Expensive but great. 6x9 hardcover 784 pages 628 illustrations  
Cat. no. 1241

\$57.50

# Turn wood like a pro!



## CRAFTSMAN WOODTURNER

by Peter Child

Here's another woodturning book, but not JUST another. This is one of that top 10% or so of all woodturning books on the market.

Child is English and obviously knows what he's doing. He teaches quality turning. Chapters include: the lathe, drilling, reversing rotation, bowl turning, turning bowls with high-speed steel tools, flat work, turning between centers, two multi-purpose chucks, safety. Part II includes seventeen different practical examples from tool handles and pepper mills, to hour-glasses and laminated woodturnery. And an appendix includes timber for turning, converting your own timber, turning unseasoned logs, making woodturnery pay.

These are much the same topics covered in other high-quality turning books, but every book is slightly different. Every teacher has certain tricks and tips to teach, so every book is slightly different. If you have another turning book, you might consider getting this, too - if your budget can afford it.

Excellent illustrations. Easy-to-read. 8½x11 paperback 247 pages  
Cat. no. 442

\$12.95

## Engineers and Engines Magazine

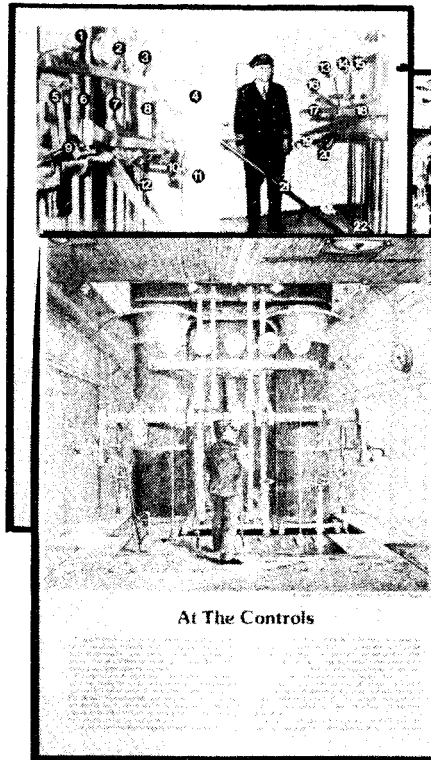
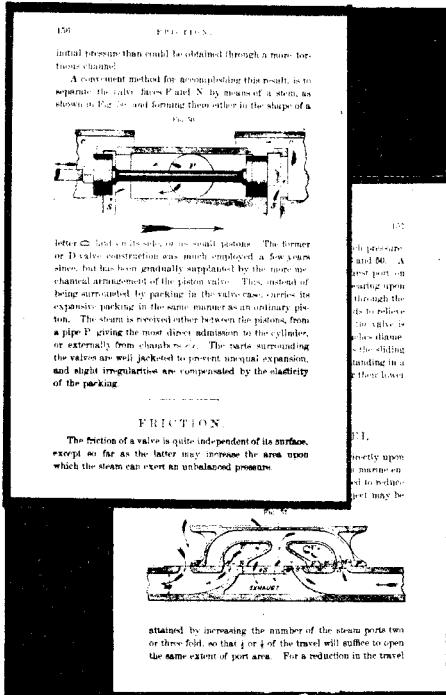
On the cover it states: "The bi-monthly magazine for all steam, gas, tractor, railroad, locomotive, and farm machinery enthusiasts."

The issue before me includes a short history on the development of hot air engines, history of the Waterloo factory, machines built to last, numerous articles on tractors and threshing, an article on a stationary Corliss steam engine in Michigan, one-lungers, numerous ads for engine auctions, parts, models, books, etc. It's slanted toward farm machinery, but it has something for anyone who likes engines. Order a sample copy direct from the publisher. Send \$3.00 to Engineers and Engines Magazine, 1118 N. Raynor Ave., Joliet, IL 60435.

DO NOT ORDER FROM ME. DON'T SEND ME MONEY FOR A SAMPLE COPY.

# Steam Engine Steam Boat Engines! Great!

## Slide Valves

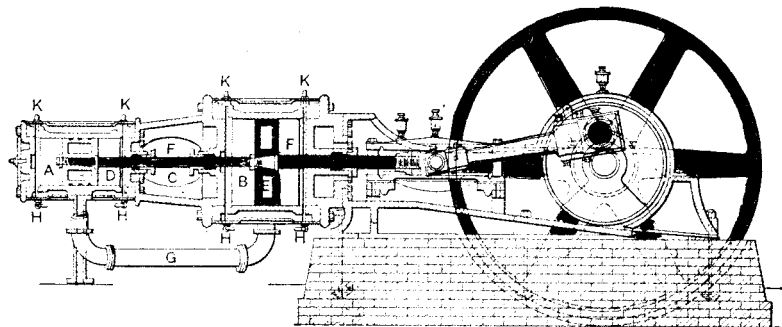


### Paddle Wheel Steamers and their GIANT ENGINES

by Bob Whittier

A quality booklet! You get loads of text and great illustrations of steam boats, and rare details of the giant engines that powered them. You get a history of the walking beam engine, a cross section of an 1850 engine, details on boilers, photos and drawings of steam boat controls, views of boats, details on paddles, and other engines and more. Covers mostly early side wheelers. Fascinating. I wish it were ten times bigger! 8½x11 booklet 48 pages Cat no. 1183 \$7.95

## 1905 Steam Engineering!



### ELEMENTS OF STEAM ENGINEERING

BY Spangler, Greene & Marshall  
reprinted by Lindsay Publications

Like steam huh? Here's a time machine that will put you into a 1905 engineering school first-year class on steam. There is little theory. You are taught what 1905 state-of-the-art really was.

Chapters include: boilers, boiler details and accessories, boiler-room auxiliaries, slide-valve steam engines, engine details, valve motions and diagrams, indicating and governing, governors and valves, and condenser and multiple-expansion engines.

Almost every page has an illustration. You'll see Vanderbilt fireboxes, feed check valves, a Reliance water column, a Warren Duplex pump, a Patterson damper regulator, a 6x8 engine cylinder, sectional packing rings, Porter-Allen connecting rod, thrust bearing,

eccentric strap, negative lap diagrams, Thompson and Crosby indicators, prony brake, Weiss condenser, Westinghouse compound engine, and much, much more. You'll even see some info on steam turbines.

Steam power was THE power source at the turn of the century. In effect, this book will show you the equipment that kept the world moving. No doubt, after taking this overview course, students would then take detailed courses in the particular field that interested them.

There is some discussion of railroad locomotives, but for the most part you'll study stationary engines. And if that's your meat and potatoes, order a copy. Steam buffs will find this very interesting. 5½x8½ paperback 336 pages Cat. no. 4147 \$11.95

### SLIDE VALVE AND LINK MOTION

by William Auchincloss  
reprinted by Lindsay Publications

Almost every simple steam engine you'll see or build will have a slide valve to control admission of steam into the cylinders. If you think they're simple to build and use, you had better think again!

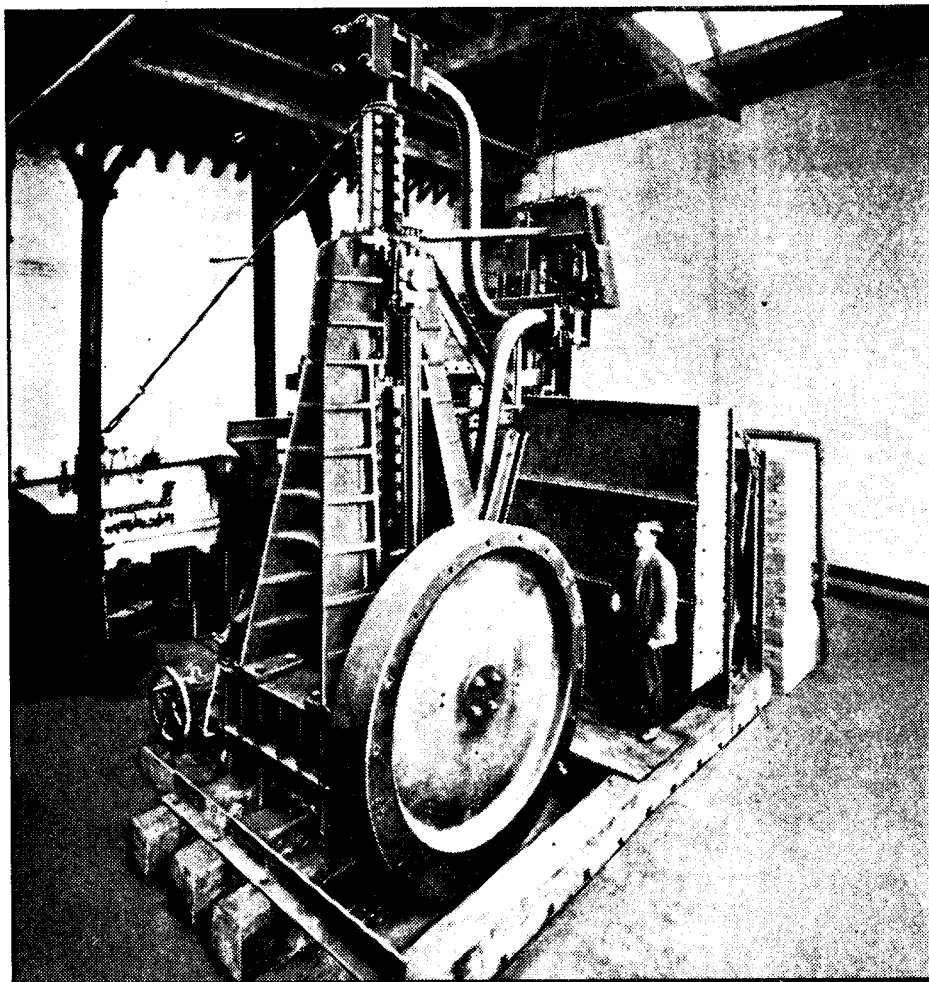
Sure, you can cast up and machine a slide valve along with a simple linkage and get your engine running. But if you want performance, there's a whole lot more to it than that. Slide valves must be properly designed with care given to lead, width of the bridge, width of the exhaust port, inside lap and much more.

After you have a good design, it must be timed correctly with carefully designed and adjusted valve gear. And this can be complicated.

Here's a "heavy" volume printed in 1891 that will teach you what you need to know. Chapters include: elementary principles and general proportions, proportions modified by crank and piston connection, adjustable eccentrics, link motions, independent cut-off, clearance, crank and piston motion formulas, and more.

Valve and linkage motions always use a lot of geometry, so get yourself a good rule and a compass and get set to learn a skill that is no longer taught. What you learn here could make all the difference between a dog and smooth running, fuel efficient honey of a steam engine.

First written in 1869 with sixth edition prefaced in March 1875. If you're into steam, grab a copy of this rare info. 5½x8½ paperback 170 pages Cat. no. 4139 \$9.95



## Secrets of the very efficient Malone Heat Engine ...

**Secrets of the  
MALONE HEAT ENGINE**  
by Richard Ford

The patent office is filled with as many unusual engine designs as there are designs for 200 mpg carburetors. Unfortunately, the vast majority of the engines work as well as the vast majority of carb designs. They don't. So how do you separate out the duds?

If an unusual engine really performs, you'll find documentation in engineering journals. If the machine is really new, engineers want to know about it. Articles from engineering journals form the basis for this reprint, so you know this engine is worth looking into.

Ford's introduction to this engine reads:

"The Malone heat engine is a regenerative cycle engine similar to the Stirling hot-air engine but employs water instead of air as the heat transfer medium. The engine was developed in Newcastle-on-Tyne, England by John Fox Jennes Malone during the mid to late 1920's. The Malone power plant operates without boilers or condensers. Expansion of water runs the engine, the water being heated rapidly in one cylinder and cooled in another to cause a movement against pistons connected to a common shaft.

"Results of tests made by three independent engineers showed an indicated efficiency of 27% and after making allowances for furnace and mechanical losses, a commercial engine of 100 boiler horsepower will run at 20% overall efficiency from raw coal to the power shaft, where the approximate engine

weight is 300 lbs. per ihp. In comparison, a superheated steam locomotive engine was rated at only 8% indicated and superheated marine engine at 14 7/8%. The weight and cost of the Malone engine are about the same as that of a steam engine, but the water expansion engine can give the same power output at half the fuel consumption with no water consumption...."

So why wasn't it developed? It was perfected in the 30's during the Great Depression. Who would take a chance on it then? Then along came WWII. After that, steam was phased out, so the chances for this engine diminished. Apparently it was forgotten.

But here's a gem to experiment with. Maybe this is the engine that could power an auto! Or generate electricity for your home! Who knows? It's no more complicated than steam, but much more efficient. Look into it.

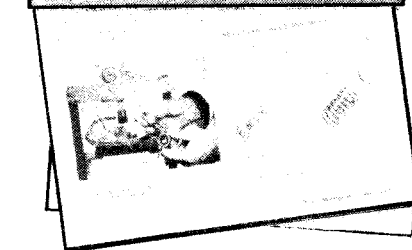
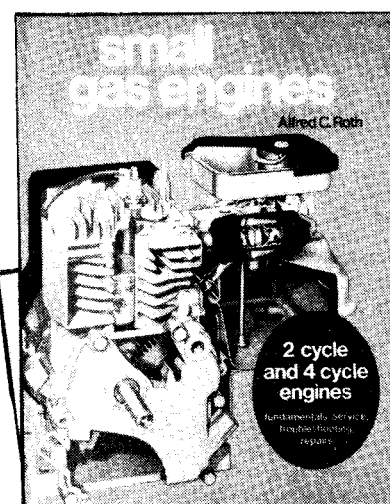
You get lengthy articles from two different British engineering journals and copies of two different US Patents. There should be enough info here to start development. Order a copy! 8 1/2 x 11 booklet 48 pages  
Cat no. 867

\$7.95

**Order the books you  
want today, or you  
could be sorry!**

Lindsay Publications Inc, PO Box 12, Bradley IL 60915 0012

## Tune-Up, Service, Rebuild Small Gas Engines



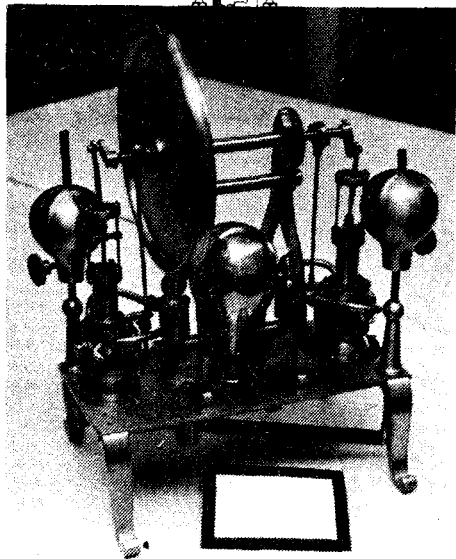
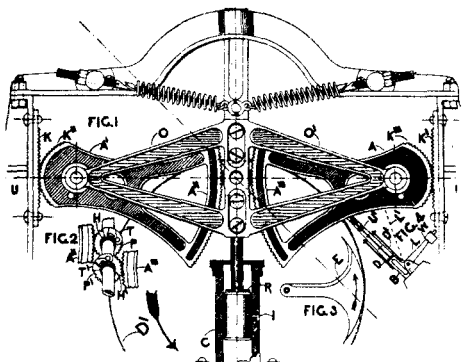
**Engine Manual  
Top Rate Quality—  
One of the better small  
engine books on the  
market today...**

**SMALL GAS ENGINES** by Roth & Baird

Learn small gas engines from this quality technical school textbook. You'll learn not only the simpler things such as basic engine operation, lubrication, and components, but you'll learn about small engines specifically. You'll discover the techniques of troubleshooting, servicing, tune-up, rebuilding pistons and cylinders, rods, bearings and valves. You get big bright pages loaded with top rate photos and drawings. The usual high quality. 8x10 232 pages 400 illus.  
No. 179

\$16.50

# The history of PERPETUAL MOTION



## PERPETUAL MOTION The History of an Obsession by Arthur Ord-Hume

People for centuries have attempted to build a machine that will produce more energy than it consumes. And they've all failed.

If you think you've invented a new type of perpetual motion machine, you had better read this book. Chances are, it has already been attempted.

For the rest of us, this book is interesting reading. There are some machines, that don't actually produce energy, but they run seemingly forever on a small amount of energy, like Singer's perpetual chime that was set up in 1840 and is still operating!

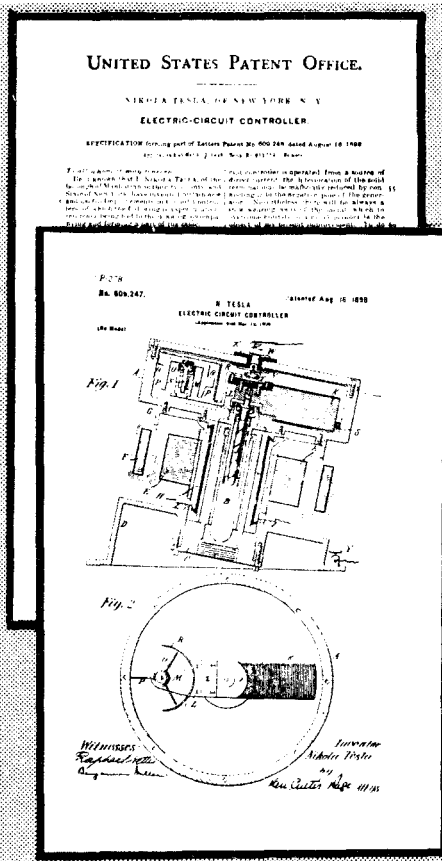
Learn about medieval machines, self-moving wheels, lodestones, electromagnetism, steam, capillary attraction, spongewheels, Cox's machine, the Redheffer device, the Keely motor, odd ideas about vaporization and liquefaction, the barring of perpetual motion devices from the patent office (although the magnet motor sneaked in), rolling ball clocks, and more. You get lots of illustrations, and an excellent list of references for further reading.

Interesting book! Well written and researched. Excellently done. If nothing else, put one in your reference library. It's not all that expensive. 5½x8½ paperback 235 pages

Cat. no. 510

\$5.95

# TESLA



Meet the brilliant  
engineer who  
gave us  
alternating  
current!

## NIKOLA TESLA

### Lectures - Patents - Articles

by Tesla Museum, Belgrad Yugoslavia 1959

This is a complete reprint of the original 1000+ page collection of Tesla papers — probably the largest single collection available today.

Lectures include: AC motors and transformers 1888, high frequency AC and illumination 1891, high frequency & voltage AC 1892, light and other high frequency phenomena 1893, high frequency oscillators for medical use 1898.

Patents include many on motors and their components, alternators, and induction motors. Nine patents cover electrical transmission. Six patents cover electric lights. Seventeen patents address high frequency apparatus (like the Tesla coil) and circuit controllers. Twelve patents cover methods of wireless transmission of electrical energy. Another nineteen patents cover mechanical and electrical devices for ships, ozone production, electromagnet coils and the like.

Articles deal with electric discharge in vacuum tubes, x-rays, current interrupters, oscillators, television, electric drive for battleships, and more.

You'll find a whole section of photographs, but they're of poor quality.

This is the raw material that less-than-scrupulous authors have used to manufacture the "secrets" that Tesla cultists fervently believe have been suppressed. If you want the straight truth about this prolific inventor, who like anyone else, was eccentric in some ways, then you should find this collection quite interesting.

Expensive, but not that bad considering this is 8½x11 over 2" thick with plastic spiral binding 1000+ pages

Cat. no. 720

\$45.00

# Tesla's Biography

## TESLA: MAN OUT OF TIME

by Margaret Cheney

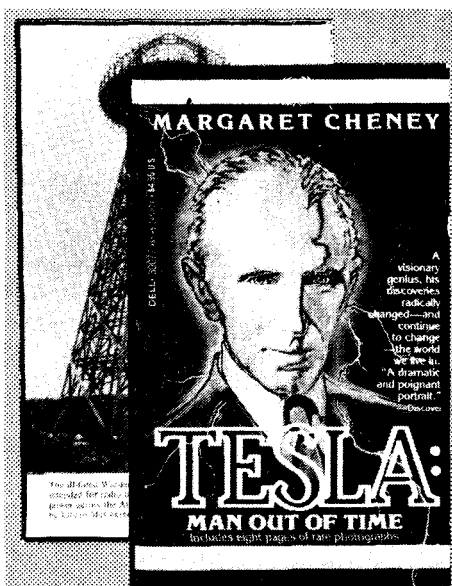
"Flamboyant, eccentric, almost supernaturally gifted, had he been born today he would still be ahead of his time. Called a madman by some, a genius by others, and an enigma by nearly everyone, Nikola Tesla was perhaps the greatest inventor the world has ever known. . . ."

"It was Tesla who harnessed the alternating electrical current that we use today. . . . Tesla who actually invented radio. . . . Tesla who invented fluorescent lighting and the incredible bladeless turbine. He introduced us to the fundamentals of robotics and computer and missile science, which continued to create and transform the future. . . ."

There are many books about Tesla, some of them are garbage written by "groupies" who worship Tesla as a god. Here's a great factual biography getting great reviews — the story of a wizard who was Edison's enemy, Mark Twain's friend, and J. P. Morgan's client. This is the real story. Excellent book at a reasonable price. "Drugstore" paperback 310 pages some photos

Cat. no. 717

\$4.95



[illegible]

"Space energy receivers... may be defined as a class of devices which apparently collect electrical energy from the surrounding space without applied force, by some process other than chemical or mechanical action."

Do the machines described here really work? I wonder. But whether you believe they do or not is of no importance because you'll find this interesting reading anyway. Even if you're a skeptic like me, you will enjoy the photos, diagrams and claims.

In addition, you get references, books to read, a list of experimenters, and other tidbits. It's quite interesting, and if there is one complaint I have, it's that "Receivers" is just not long enough — and that's quite an endorsement coming from a skeptic like me. I think you'll like it. Very unusual! Order a copy. 8½x11 booklet 21 pages

Cat. no. 882	\$4.50
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### A MINIATURE TESLA COIL.

Most owners of small induction coils have at some time or other wished that a Tesla coil giving results could be built to run on their apparatus. This article describes a Tesla coil made to work with a one-quarter inch spark coil.

CONNECTION BETWEEN PRI. AND SEC. AT BASE OF COIL

PRI. WINDING HELD IN PLACE BY SOLDERING TO BRASS SOLDER IN BASE

END OF SEC. CONNECTS TO BRASS SPIRALS

SECONDARY - SECT. OF WIRE 0.002 WIRE WOUND ON 2 QUARTER INCH CYLINDER SPACED 1/2 IN PER INCH WITH TRAIL LINE SPACING COIL BETWEEN ADJACENT TURNING OF WIRE

PRIMARY - 1/2 IN. WOODEN DISC 18" DIA. WOUND ON 1/2" WOODEN DISC 24" DIA.

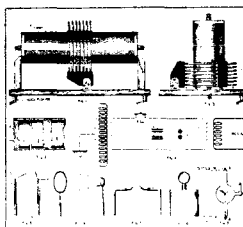
INSULATORS

Some details of a 35-inch Gudio coil. Note the primary winding of brass ribbon.

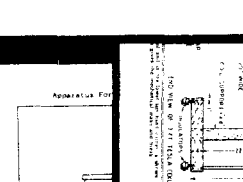
This unit includes the fine paracore ribbon spring, as a primary coil. It is made of Tesla primary ribbon, 1/2 inch wide, 1/2 inch thick, and is covered in lacquer. It is wound on a 24-inch diameter wooden disc. The secondary is made of 24-inch diameter wire, 1/2 inch thick, and is wound on a 24-inch diameter wooden disc. The primary is wound on a 1/2-inch wooden disc, 18 inches in diameter, with 24-inch diameter insulators. The primary is connected to a 24-inch spark gap. The secondary is connected to a 24-inch spark gap. The primary is connected to a 24-inch spark gap. The secondary is connected to a 24-inch spark gap.

purpose. The pieces A and B are of wood, shellac is used to join the parts together. Avoid the use of nails in this construction.

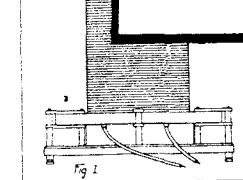
After applying two coats of shellac to the assembled tube with a closely woven fabric of cloth and with



The authors are grateful to the referees for their valuable comments and suggestions.




Example B gives a 54 spars. A live ends. The re cardboard tubes or form should be this molature this will cency. The rotary flexibility and th and is recommended for the 160


Special Transformer for Producing Current for  
Electrical Steam Act.

## A black and white illustration of a tall, tapered, conical structure, likely a radio antenna or a specialized lamp component. The structure is covered in a dense grid of horizontal and vertical lines, suggesting a mesh or a woven material. At the very top of the cone is a small, round light bulb with a visible filament, mounted on a short, tiered pedestal. To the right of the top of the cone, the word "New" is written in a large, bold, serif font, enclosed within a jagged, starburst-like border. Below the word "New", the words "Edison coil" are written in a smaller, cursive script. A small arrow points from the text "Edison coil" towards the base of the cone. The base of the cone is supported by a series of horizontal bars or a frame, also rendered with a grid pattern.

Rare info! Too bad the book isn't ten times bigger. Get a copy for the reference library, if nothing else. Interesting reading. Recommended. 5½x8½ paperback 74 pages  
Cat. no. 4317 \$6.95

# Build a precision hand-crafted crystal radio!





**RADIOS THAT WORK FOR FREE**  
by K. E. Edwards

If you've never built anything electronic at any time but would like to try, you'll like this. Build yourself a crystal set. You'll be shown everything you need to know - from materials to tools to techniques. Edwards will show you how to build some "hot-rod" crystal sets with fancy features, but still simple. This book gives me a good feeling. I think you'll like it. 5 1/2 x 8 1/2 plastic spiral bound 138 pages No. 314

**CHAPTER 10  
SPEAKERS AND MICROPHONES**

The speaker of a radio is one of the most important parts of the set. It is supposed to convert electrical energy into sound. The speaker is the part of the set that you hear.

In Figure No. 54, you can see the circuit. You should study this for awhile to become familiar with the wiring.

The capacitor C1 is the main tuning capacitor and C2 is used to raise the set above ground potential. The homemade switch on the coil and C1 are used together to make an effective tuning.

100

\$5.00

## ELECTRICAL DESIGNS

by American Electrician Magazine  
reprinted by Lindsay Publications

From 1901 comes this incredible collection of electrical plans. I will admit that the designs for the motors, alternators and other devices are not as efficient as today's equipment, but the materials needed to build them are not as hard to find or as expensive as the materials that go into modern machines.

You'll find a chapter devoted to each of 34 projects including DC motors ranging from 1/6 to 3 hp, AC motors, combined AC and DC motors, a rotary rectifier for changing AC to DC, a laboratory alternator, a 1/4 hp induction motors, simple transformer, reactive coil, rheostats, meters, test sets, photometer, storage battery, arc lamp, Nernst lamp, induction coil, Tesla-Thomson coil, condenser, Wimshurst machine, telephone transmitter and receiver, dry cell construction and some commutator tools.

People who rewind motors should find this a valuable reference because of the variety of machines and the details of their construction. And some of these motors are brutes; a four kilowatt AC-DC motor is nothing to sneeze at!

Electrical experimenters should find the projects interesting. Building ammeters and voltmeters is not something you can learn everyday.

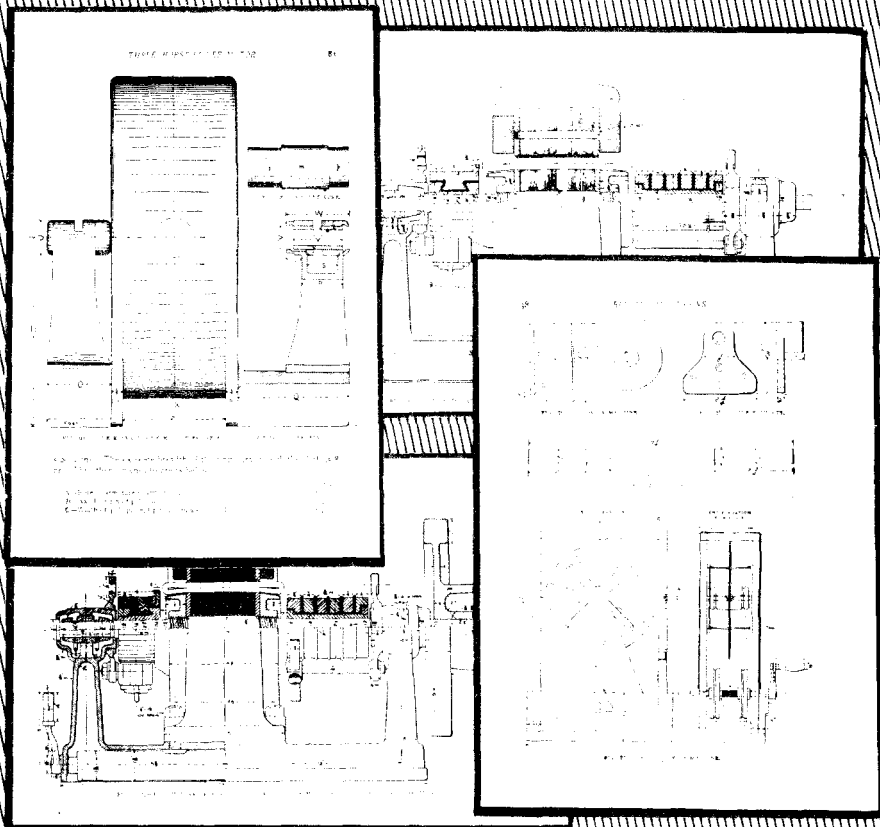
Alternate energy people should find the battery construction topics useful, and the lab alternator should be a good learning exercise. Any DC motor can be used as a generator if properly connected, and there are many, many DC motor plans.

And survivalists should consider this vital information for stockpiling. A water wheel can turn a generator and power the arc lamp described, charge the batteries described so that the homemade telephone described can be used.

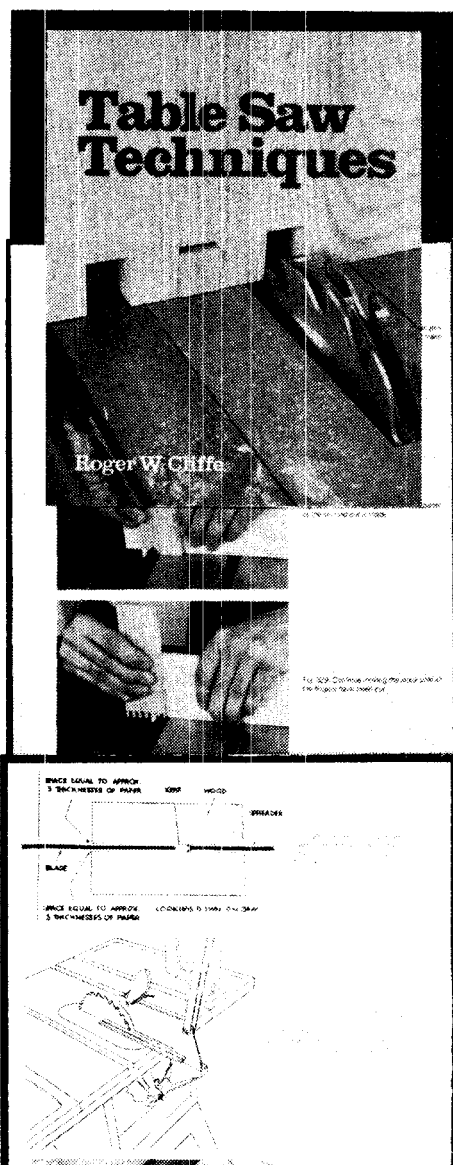
Whatever your motives, you'll find this rare nuts-and-bolts electrical how-to a very valuable reference. Get a copy. Well illustrated. 5 1/2 x 8 1/2 paperback 262 pages Cat. no. 4228

\$10.95

# Incredible book of electrical plans!



# Great Table Saw Techniques!



## TABLE SAW TECHNIQUES

by Roger W. Cliffe

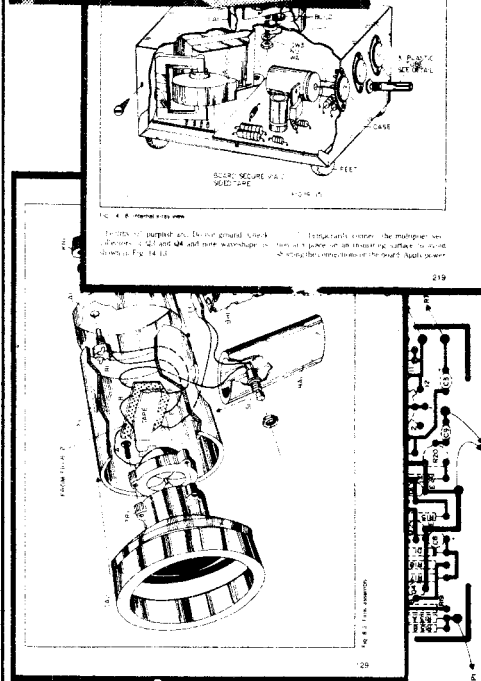
If you have a table saw or are planning to get one, you should have a copy of this. Even if you spend most of your time turning metal or restoring cars, when you finally do fire up the table saw, you'll use the ideas here to turn out even better work.

In part I you'll learn the fundamentals from controls to safety. Part II covers basic, intermediate and advance operations from simple cross cuts to tongue-and-groove joinery, kerf bending and more. Part III gives advice on setting up the saw and keeping it accurate so as to get maximum performance. And the last section covers projects including a variety of jigs, case, chest, nightstand and so on.

The price may be higher than other books, but this is a thick book with wall-to-wall pictures. Excellent! I think you'll like it. 8x10 paperback 352 pages

Cat. no. 448

\$14.95



# Strange electronics plans!

## Build Your Own LASER, PHASER, ION RAY GUN . . .

by Robert E. Jannini

Here's one of the craziest collections of how-to plans I have ever seen. And one of the most interesting.

I suppose the building of a laser, phaser, or ion ray gun is aimed at kids who think they'll have a "Buck Rogers" ray gun. I doubt if many of the projects have practical value but they sure could be fun.

You'll learn how to build high-power pulsed red ruby laser gun, high-power continuous IR CO<sub>2</sub> Laser, ultrasonic field generator, programmable high-power ultrasonic generator, 250,000 volt Tesla coil, magnetic field distortion detector, solid-state Tesla coil, a variety of wireless "bugs", a super-sensitive parabolic microphone, electronic paralyzing device, battery charger and eliminator and much more.

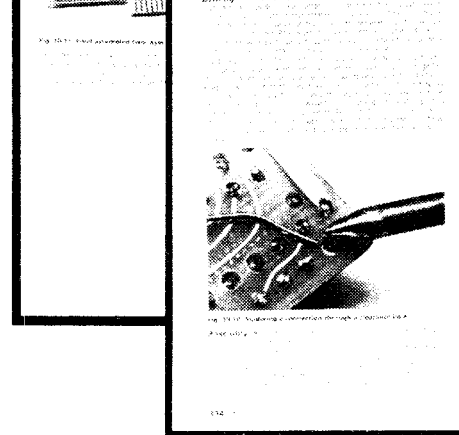
Jannini is an experienced electronics inventor, and holds many patents. He'll give you parts lists, wiring diagrams, assembly diagrams and all you need to get these projects built. I don't think that it's any coincidence that almost every plan has a footnote telling you that kits are available from Information Unlimited, Inc., which is owned by the author. No doubt, that firm's best selling plans have been reprinted in this single volume.

This book is expensive, but it delivers. I really like this, and I'm sure you will too. Order a copy, even if it has to sit for two years on the shelf before you get ready to build. Excellent book. 8x9 1/2 paperback 390 pages

Cat. no. 346

\$15.95

# Electronic Prototypes!



## ELECTRONIC PROTOTYPE CONSTRUCTION

by Stephen D. Kasten

Fabrication techniques for electronic devices changes constantly. Here's a dynamite book that will show you the current methods, and how to get an electronic design into the prototype or small production stage.

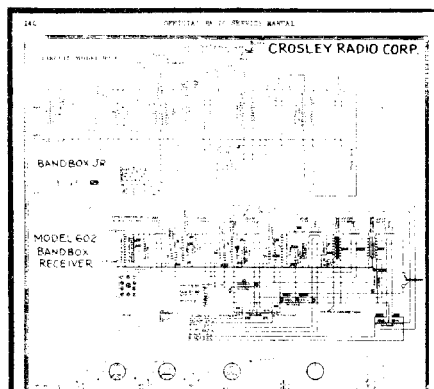
You'll learn about wire-wrapping techniques: methods, boards, tools, hardware, and power supplies. Learn about printed circuit boards: double sided types, artwork, photo resist techniques, electroplating, etching, soldering, drilling, etc. Graphic techniques cover photofabrication, masks, darkroom equipment, silk-screen printing, 35mm photography and more. And you get details on hardware packaging: enclosures, parts layout, wiring, front panels, finishing, tools, and more.

So if you want to produce an electronic product or need to add electronic controls to a number of machines you're thinking about building and marketing, then this will answer tons of questions and show you what's possible. It's somewhat expensive, but it delivers. Loaded with valuable info. 5 1/2 x 8 1/2 paperback 398 pages well illustrated

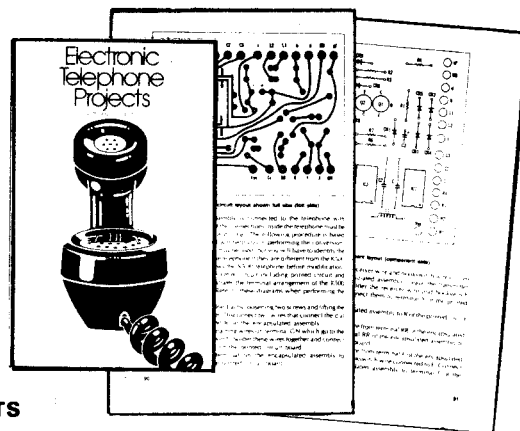
Cat. no. 343

\$17.95

# Rare old radio circuits!



# Make your own telephone accessories!



## ELECTRONIC TELEPHONE PROJECTS

by Anthony J. Caristi

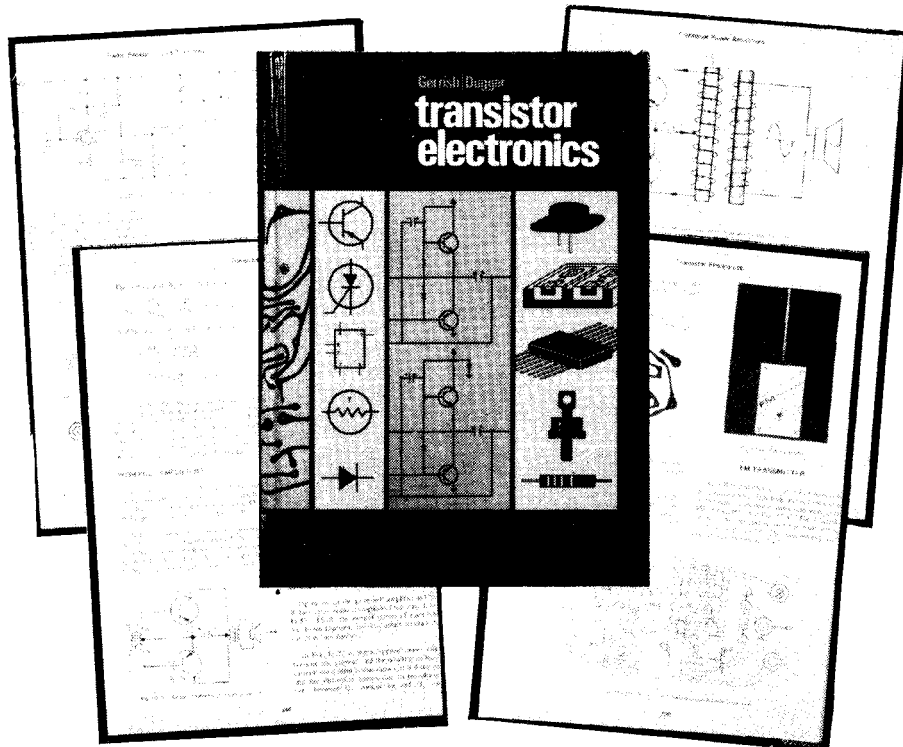
With the break up of the AT&T, many people are interested in buying phones, some with really special features. Wouldn't it be more fun to build your own phone?

Projects include a soft tone bell, sentry, bug, auto record/call, intercom phone, dial tone, auto-dial, ring-a-thing, telephone trigger, CB phone patch, conferencer, beacon, auto bell cutoff, babysitter and computer memory dialer.

Making printed circuit boards is easy, inexpensive, and makes construction very easy. If you've never made a board, then chapter three will show you how. Printed circuit board layouts are provided for all projects just to make things easy.

Looks like a lot of fun. And you're sure to learn something. 5 1/2 x 8 1/2 paperback 168 pages  
Cat. no. 334 \$8.95

# Learn transistor electronics!



## TRANSISTOR ELECTRONICS

by Gerrish & Dugger

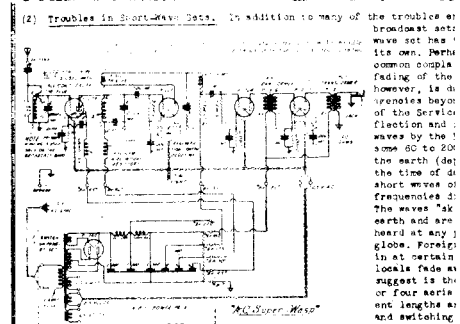
You don't know anything about electronics? Do you feel lost in this electronic age, but want to learn? Here's a great technical school textbook.

This book starts at zero and brings you to the level of building simple projects like LED light blinker, transistor audio amplifiers, code practice oscillators, even a little transmitter. You'll even be shown the printed circuit board layout. These projects are given at the end of the chapters both to make learning more fun and to drive home the lessons to be learned.

This book is well written, well illustrated, and detailed so that you really learn something. Chapters include magnetism, generators, inductance, capacitance, ac-dc motors, diodes, transistors, amplifiers, oscillators, radio, digital circuits, integrated circuits, and more.

I'm really sold on this. It's written so a kid can understand it, but really teaches something. It's easy to read and look at — loaded with big illustrations. Recommended.

9 x 12 hardcover 368 pages  
Cat No. 325 \$19.95



## OFFICIAL RADIO SERVICE MANUAL and Complete Directory of all Commercial Wiring Diagrams 1930

by Hugo Gernsback

Radio broadcasting was taking off in 1930. Manufacturers by the dozens were turning out radios for home use.

Gernsback published this large book of wiring diagrams for radio repair for men of the era. If you're interested in old technology, the repair of old sets, the installation of an authentic radio in an antique car, or like to build modern replicas of early sets, then this is definitely worth having.

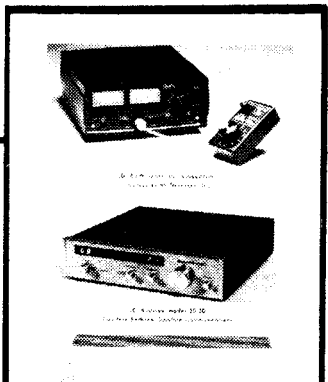
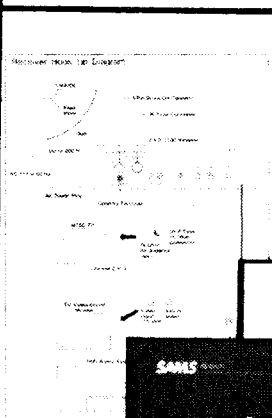
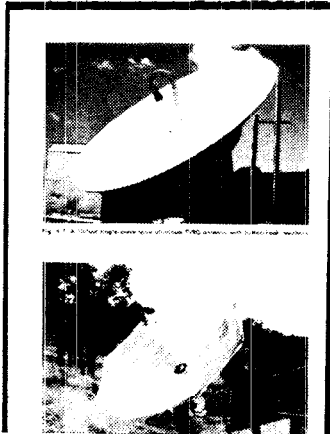
In the first 75 pages you get valuable tips on the precautions and peculiarities of service equipment, power supplies, vacuum tubes, speakers, antennas, rf amplifiers, detectors, af amplifiers, noise, radio-phonographs, short-wave receivers, auto radios and more. The rest of the book is then diagrams for receivers from AC Dayton to Zenith.

Most of the diagrams are for tuned-rf receivers with a few of the old regeneratives and a few of the new superheterodynes thrown in. This is a most unusual reference. More and more people are collecting early radios, so this will be valuable in their restoration. Great book if you're into this kind of thing. 8 1/2 x 11 paperback 352 pages  
Cat. no. 345 \$15.95

# WARNING!

Prices and Availability can (and usually do) change at any time without notice. Your packing slip always shows current prices.

# Satellite TV Handbook



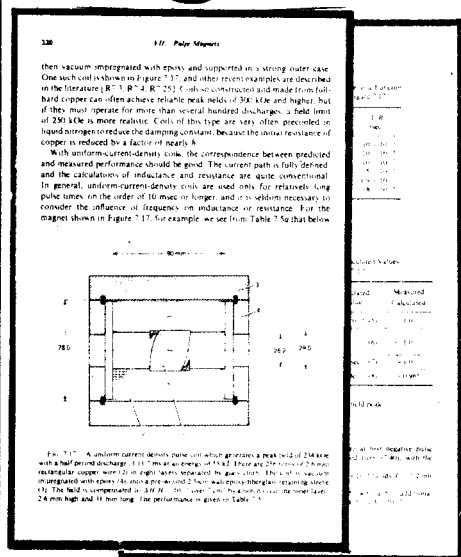
## SATELLITE TV HANDBOOK by A. T. Easton

A 1983 copyright on a hot, hot topic! Chapters include: how it began, cable TV in the US, what's on the "birds", the home satellite system, how to cash in on the boom, how to build your own earth station, how to build a backyard dish for less than \$200, satellite receiver you can build for \$300, finding hidden satellite signals, looking at other satellites, info on subscription, low power and multipoint TV, and the coming direct broadcast system. Thick book loaded with illustrations and detail. One of the best I've seen yet. Expensive but good quality.  
5 1/2 x 8 1/2 paperback 438 page s  
Cat no. 337

\$16.95



# Design Electro-magnets!



## SOLENOID MAGNET DESIGN by Montgomery & Weggel

"The magnetic and mechanical aspects of resistive and superconducting systems." Sounds hairy, doesn't it? It is hairy, but it delivers more about the design of electromagnets than I've ever seen in one place before.

Chapters include: uniform current density solenoids, non-uniform current density types, cooling considerations, magnetic stresses, superconducting magnets, pulse magnets, field analysis and more.

You'll find a lot of math, especially Greek letters, and in some areas, such as field analysis, some heavy calculus. But if you refuse to let that scare you, between the math are clearly written paragraphs, graphs, charts, drawings and photos that deliver more inside information on electromagnets than you'll find in all the libraries between here and the Snake River.

Yes, it's really written for engineers, and it's specialized and expensive. But if you want the inside story, you'll have to buy this and strip out the parts useful to you. Considering the quality, it's fairly priced. Unusual. 6x9 hardcover 312 pages

Cat. no. 1235

\$21.50

## FAST SHIPPING

Orders are shipped via book post — the ol' US Mail. Now don't knock it. It's extremely reliable, and much cheaper than UPS for the average order. Delivery is supposed to take less than a week after we put our package on the post office dock, and most often that's the case. If you need extra fast service, we can send priority mail, which is only slightly more expensive than UPS but generally much quicker — three days or less. If that's what you need, request PRIORITY MAIL and order with Mastercard or Visa.

*Line*

# Satellite TV!

## 100 CHANNEL TV by Merit Products

Here's the new edition of the very popular "50 Channel TV" offered in recent years. You get 117 pages of practical information on getting TV down from the geosynchronous satellites.

Section one explains what the satellite TV industry is all about and what exists. The second part, which is the bulk of the book, covers your own earth station. Learn about antenna sidelobe performance, types of feeds, torus antennas, choosing a site, LNA's, antenna matching, receivers, power and maintenance requirements. You get charts and lists of satellite services, channels available, books, periodicals and sources of equipment. You'll see pictures and stats on antenna polarizations, noise measurements, connectors, antenna systems, receiver kits and much more.

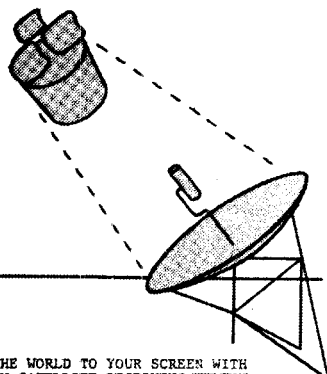
I don't care for the plastic spiral binding, but that's often the price you pay to get a privately published up-to-date technical publication. Excellently done. If you're considering setting up an earth station, you should have this. 8 1/2 x 11 spiral bound 117 pages heavily illustrated

Cat. No. 342

\$11.95

Lindsay Publications Inc., PO Box 12, Bradley IL 60915-0012

## 100 CHANNEL TV



BRING THE WORLD TO YOUR SCREEN WITH YOUR OWN SATELLITE RECEIVING TERMINAL.

## Direct Current DYNAMO DESIGN

reprinted by Lindsay Publications

Dynamo is the old-fashioned term for what we call generators — machines that convert rotary motion in DC electricity. You can get alternators from automobiles that kick out 12 volt DC (other voltages with regulator modifications), but they can only produce a couple of thousand watts maximum, and there's no guarantee that an alternator can stand up continuously to that kind of mechanical loading.

For large power output, you'll have to pay through the nose for a large alternator or generator. OR... you can build one.

Here are the secrets from 1905 when yokes and pole pieces were made from cast and wrought iron. They're not as efficient as today's machines made from high-tech steels, but materials are low cost and easy to get.

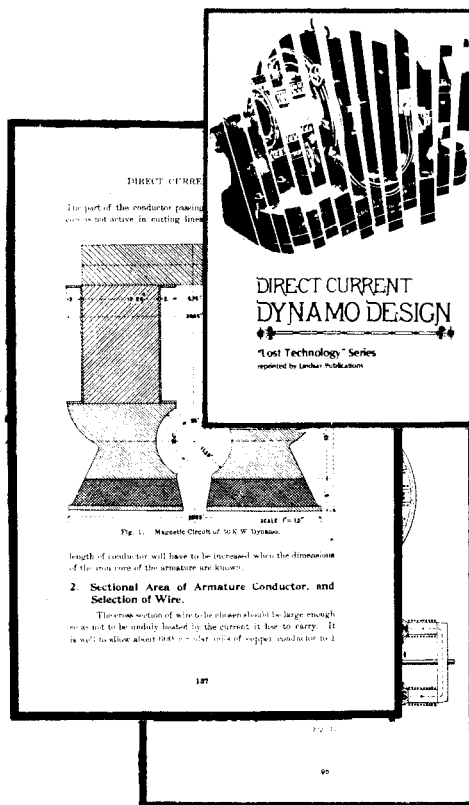
You'll learn about commutators, armature windings, excitation, armature reactions, all the winding types, brush shifting, hysteresis losses, and much more.

You'll get all the formulas you need to design good size dynamos. You'll get, as an example, the complete design of a 50,000 watt machine that could kick out 200 amps at 250 volts at 1050 rpm! You may not need something quite that big, but you can scale the design down.

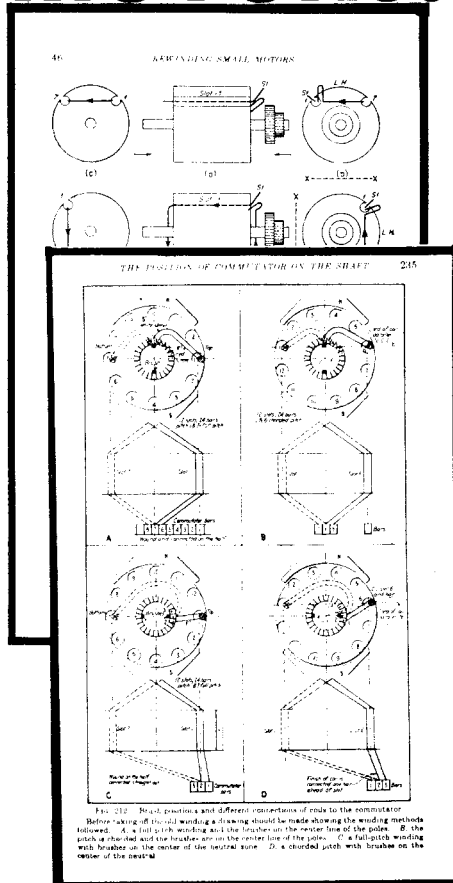
This might be just what you need on the output end of a windmill or water wheel — or large steam engine like the old days. The design detail revealed here is rare. If you're one of those few people who might someday need this info., get it now. When we run out, we probably will not reprint. We'll use the catalog and shelf space to reprint something else.

Good book. Fair price. Rare info.! Order one.  
5½x8½ paperback 160 pages  
Cat. no. 4058 \$8.95

## Build a DC Generator!

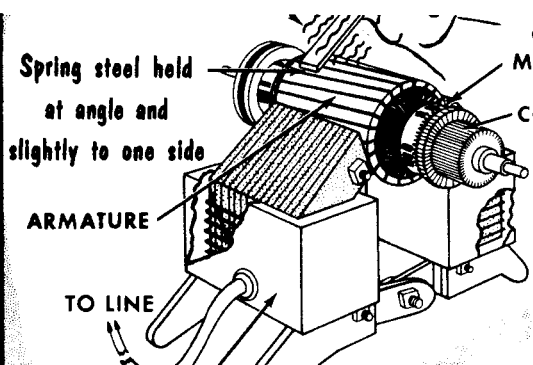


## MOTORS!



## Repair small motors!

Using a growler



### FRACTIONAL HORSEPOWER MOTORS and REPAIR

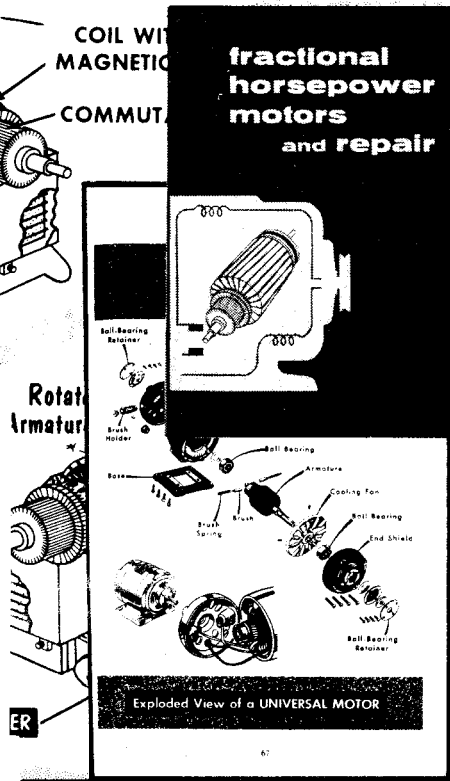
by Gerald Schweitzer

When one of your shop motors fails, chances are this book can show you how to fix it! *Fractional HP* is loaded with top-rate illustrations, exploded views, wiring diagrams of the windings, starters, and protection devices found on almost all small motors.

You'll learn about induction motors, split-phase, capacitor, repulsion, shaded-pole, universal, and three-phase motors. Learn about testing maintenance, control and protective devices. Get a copy of this valuable reference book for your technical library today!

6x9 168 pages  
No. 32

\$9.95



### REWINDING SMALL MOTORS

by Braymer and Roe

The subtitle in this gem reads: "Practical details of repair-shop practice and step-by-step procedure for rewinding all types and designs of fractional-horsepower direct- and alternating-current motors."

You get 37 chapters in three parts.

Part one covers general data and DC armatures: things to do before a job, recording winding data, insulation, wire, lead winding varieties, special chording split-pitch loop winding, four special windings, vee winding, how to determine the position of the commutator on the shaft, connecting up hand-wound armatures, and much, much more.

Part two deals with small AC single-phase motors: testing and locating faults, info to record before stripping the motor, insulating the core, how to make up a skein, how a hand winding is put on a stator, rewinding small universal motors, compensated series motors, fan motors, and much more.

Part three covers rewinding small AC three-phase motors: rewinding stators, diamond to round end coils, chord factors, overlap windings, and round and overlap silicone winding.

Dynamite how-to. Down to earth. Practical. Easy-to-read. Well illustrated. If you're serious about rewinding motors, this is a must have. You don't find a better how-to book than this, especially on rewinding motors.

The only thing really wrong with it is that it is too expensive, but then I have no control over that. There's so much to learn here that the first rewinding job you do will cover the cost of the book. In other words, it costs, but it delivers. I recommend it highly.

6x9 hardcover 422 pages  
Cat. no. 340

\$32.50

# Run Three Phase Motors on Single Phase!

## How to Run Three Phase Motors on Single Phase Power

by T. J. Lindsay

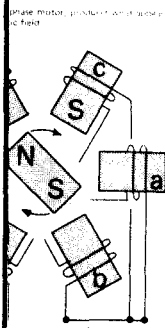


Diagram of motor poles around the rotor. The phase of the three-phase power is away from the other.

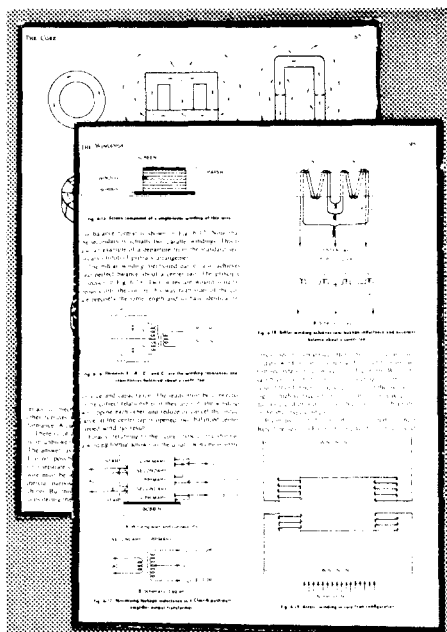
## HOW TO RUN THREE PHASE MOTORS ON SINGLE PHASE POWER

by T. J. Lindsay

Yes! You can run three-phase motors on single-phase power using any one of three excellent methods. Lathes, drill presses, and other machine tool motors can be run with the capacitor methods. The auto-former method is useful for motors running under continuous full load. You can run a whole shop full of three-phase motors from a single, easy-to-build dynamic converter! No rewinding is necessary. Methods are good to at least 150 hp and 440 volts! Low starting currents and excellent power factor are possible.

Basic three-phase and induction motor theory is included. Complete with drawings, diagrams, and capacitor values. 4 1/4 x 7 20 pages 18 illus. — a BARGAIN! No. 81 only \$3.00

# Top rate transformer book!



## PRACTICAL TRANSFORMER DESIGN HANDBOOK

by Eric Lowdon

You're planning to build your own welder? Or maybe you need a lower current plating power supply. Or you intend to wind a special transformer for a piece of electronic gear you're building. If you want to wind a transformer, then you should have this book. It's a gem.

Although not written particularly for the beginner, it nonetheless will teach someone with limited knowledge what they need to know (and isn't that the job of any good how-to book?).

Chapters include: symbols and abbreviations, elementary electromagnetics, properties of transformers, losses, cores, windings, general design, power transformers, designing for rectifiers, transformers for converters and inverters, inductors, impedance transformers, current transformers, salvage, construction, and sources, measurements and much more.

You get lots of math, but it's only algebra — the practical math you can punch into a calculator. You'll get details on modern silicon steels, tips on winding transformers, and much, much more.

For the person wanting to build an arc welder, you should refer to No. 85 "A 200 Amp Welder" to get an introductory view of transformers and the unique problems of current control. Then you should probably read this because it goes into detail where "200 Amp Welder" was forced to cut corners and make simplifications in order to make it easy to read. This delivers great practical detail, but does not consider arc welding transformers.

This is a good book. It's loaded with practical hard-to-find data. I was quite impressed when I opened it (and I've looked at hundreds of electrical and electronics books). If you're interested in transformers, then this is a must.

8 1/2 x 11 paperback 240 pages

Cat. no. 339

\$23.95

# How to Design and Build a 200 AMP WELDER

## How to Design and Build a 200 AMP WELDER

by T. J. Lindsay

You can find many different welders on the market, so why even consider building one? Maybe you can save money. Perhaps you need something bigger than 200 amps and want to scale up a standard design. Of course, there's always the pride of being able to say you built it yourself. Or perhaps you would just like to know how they work.

Here's a publication for the mechanic, the non-electrician — a first introduction into transformer type welders. You'll learn how transformers work, what is and is not important in the design of a welder transformer, how current is controlled, how an AC to DC rectifier bank is built, and more. You can design welders for 100, 200 or more amps using the principles revealed here.

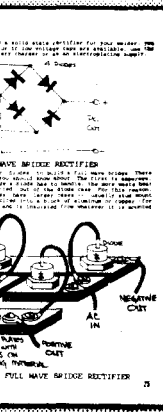
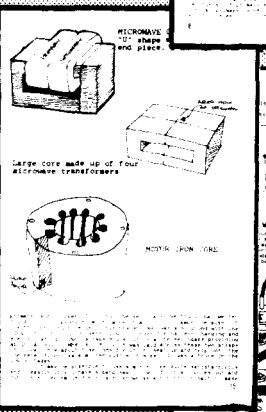
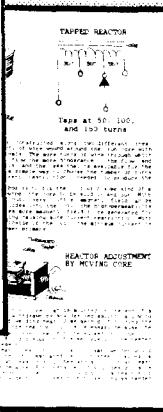
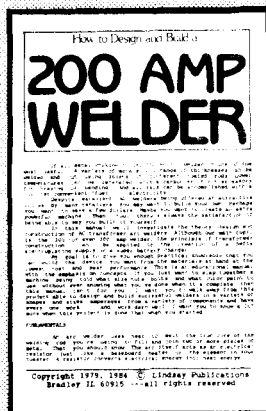
You will NOT get complicated theory. You get information that has been learned by study and by doing, rather than from designing transformers as a profession. You'll learn the unique aspects of controlling heavy welder currents. This is the information generally available nowhere else. After reading and studying this manual, you'll probably want to refer to other transformer books which can present heavier theory, details on silicon steel, wire types, design problems and much more for small transformers.

You can build a single transformer that can kick out heavy currents for welding, thawing pipes, and when used with a bridge rectifier, can be used to charge batteries, electroplate and more.

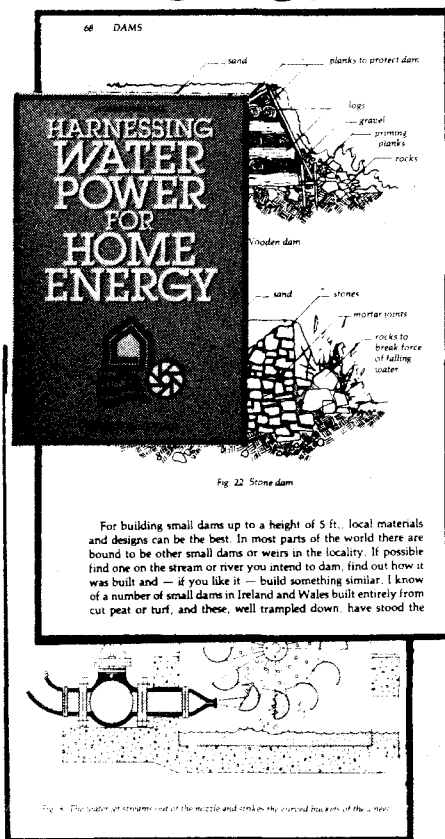
Get a copy of this hot little manual. You'll find that it is very clearly written and easy-to-read. This is the FIRST book you should consider before building or repairing a transformer welder. Order a copy today. 5 1/2 x 8 1/2 30 pages

Cat. no. 85

\$4.00



# Harness Water Power



## HARNESSING WATER POWER by Dermot McGuigan

Good books on water are hard to find. Here's a goody at a very reasonable price. Learn about overshot, Pelton impulse, and Turgo impulse wheels, cross-flow, Francis and propeller turbines, how to assess the site, and calculate payback. You'll find valuable info on transmission drives, generators, heat pumps, surveying equipment, and law.

A lot of book for the money.  
6x9 paperback 102 pages  
No. 29

\$6.95

## I need to hear from you!

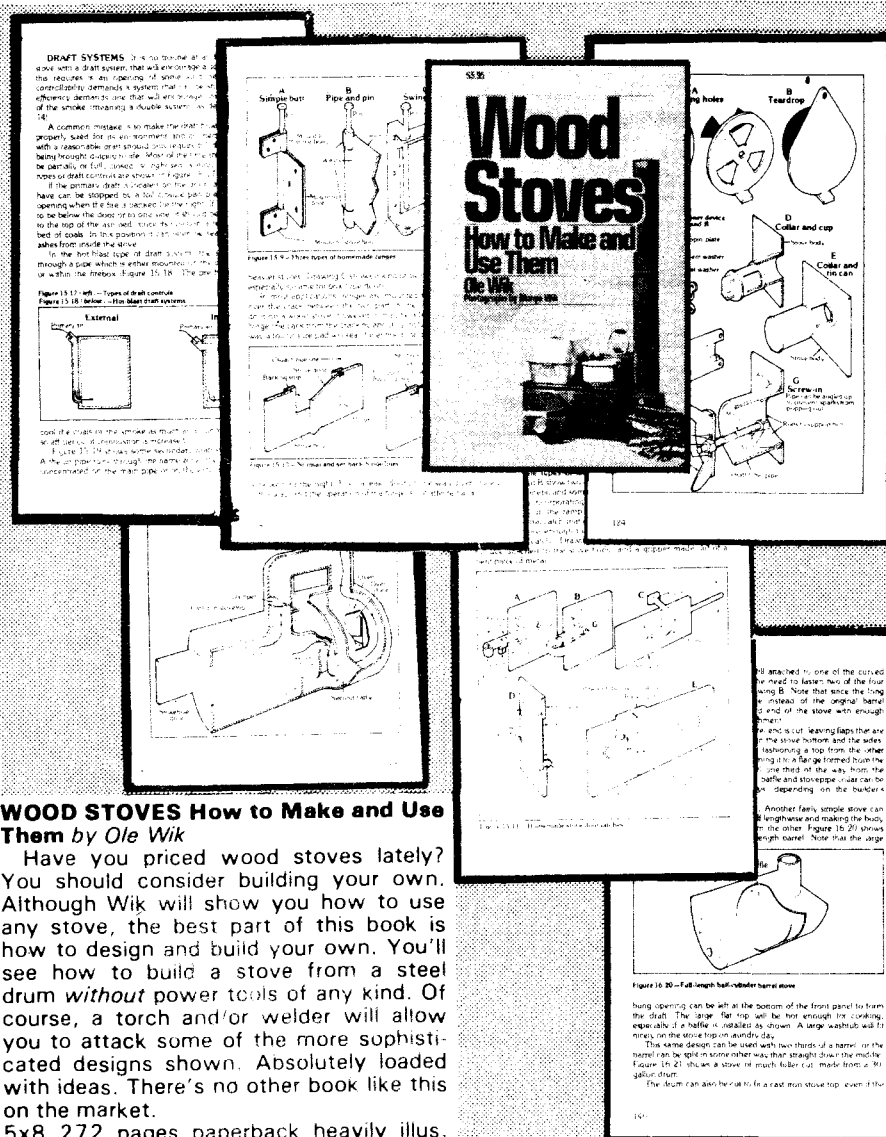
It is important that I hear from you. I want to know what things we do right as well as wrong. I want to know what books you think should be located and added to the catalog. You might rate the books you received in your last order: good, so-so, or duds (especially the duds so I can pull them out of the catalog). I need to know anything that will improve our service to you.

Put your comments on a small piece of paper (separate from any order or other business) so that I can tack it up on my bulletin board. I CANNOT write a personal letter. If I wrote letters to everyone, I'd never get anything else done around here. And if I hired someone to write letters, I'd have to raise the prices of some books, or stop selling others.

I need to hear from you more than you need to hear from me. Comments, good and bad, are always welcome. So write.

36

# Build a wood burning stove

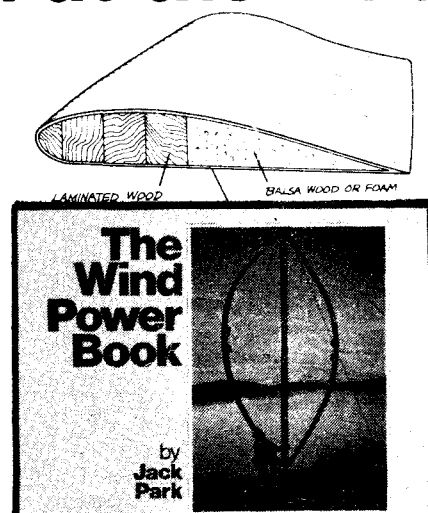


## WOOD STOVES How to Make and Use Them by Ole Wik

Have you priced wood stoves lately? You should consider building your own. Although Wik will show you how to use any stove, the best part of this book is how to design and build your own. You'll see how to build a stove from a steel drum *without* power tools of any kind. Of course, a torch and/or welder will allow you to attack some of the more sophisticated designs shown. Absolutely loaded with ideas. There's no other book like this on the market.

5x8 272 pages paperback heavily illus.  
No. 22 \$5.95

# Put the wind to work...



## WIND POWER BOOK by Jack Park

Now here's a windpower book you can sink your teeth into. Sure, it covers everything from oldtime farm water pumping windmills to the Savonius and Darrieus systems. But the thing I like best is that it's loaded with sample calculations on such things such as tip-speed ratio, maximum rotor efficiency, sizing a wind rotor, centrifugal force, sizing a water heater probe, and more.

Every windpower book is a little different. No matter if you have a dozen windpower books already, you should consider this one, too. Every serious windpower experimenter should have a copy of this. It's new, and it's good.

8½x11 paperback 252 pages heavily illus.  
No. 263 \$14.95

# Windmills & Wind Motors

## WINDMOTORS

by F. E. Powell

reprinted by Lindsay Publications

Put the wind to work with one of these turn-of-the-century windmill designs.

You'll learn about different types of windmills, some of them unusual. Then you'll be shown how to build a model tower windmill similar to those in Holland.

Chapter 3 will show you how to build a real power-producing windmill with three foot diameter sails. It may be a small windmotor, but it can drive a small dynamo. You get all the important design details.

In chapter 4 you are shown how to build a 6 foot diameter windmill capable of driving a 30 watt dynamo at 16 mph. You'll see many detailed drawings showing how the all-wood machine is built, and how metal gearing brings the power down to ground level.

You guessed it! Chapter 5 presents plans for an even bigger windmill. This one with a 10 foot diameter. Detailed drawings reveal the design and construction techniques needed to get it up and to make it produce power.

Finally, in the last chapter you get tips on generating electricity. And this is really innovative since this book was originally printed in 1910! Obviously better generators are available now, but the basic principles still apply, and the control methods shown still work.

I think you'll really enjoy this book. These may not be as hot in design as the most recent mills built, but building one of these windmotors should be relatively easy and low-cost. You get great designs from a simpler day when simpler materials were used to get surprisingly good performance.

A really nice little book to have. Low cost. Get a copy. 5 1/2 x 8 1/2 paperback 88 pages well illustrated

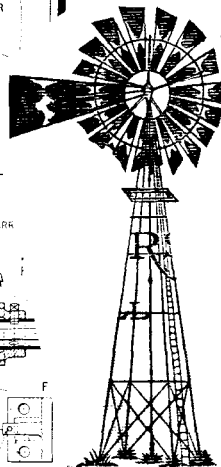
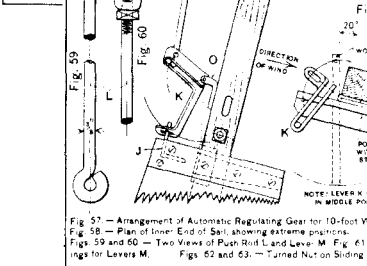
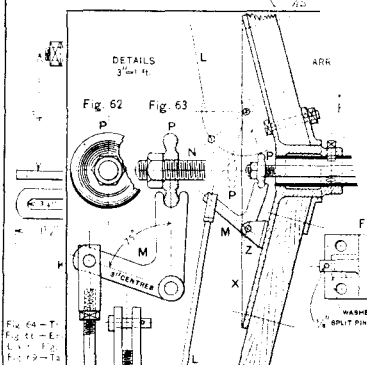
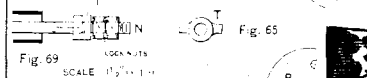
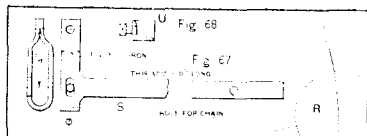
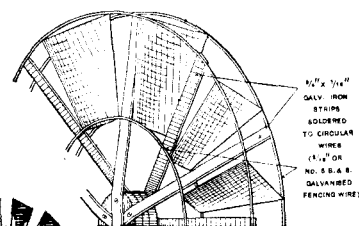
Cat. no. 4279

\$4.95

28

WINDMILLS AND WIND MOTORS

the vertical section through it in fig. 25 (which is twice the scale of the general arrangement, fig. 24), and also in the perspective drawing, fig.



ALL AMERICAN TYPE WINDMILL 29

to fig. 29, it will be seen that the



Method of Securing Hub on End of Shaft.

ried by arms or spokes of 3/4-inch x 1/2-inch hoop-iron. Six of these from each side of hub, those on the

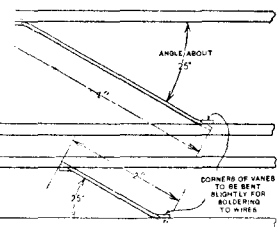
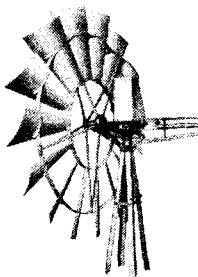


Fig. 31.—Wire Rings for Wheel: Upper Diagram, Outer Rings; Lower Diagram, Inner Rings.

front side being made of three full-length strips, as seen in figs. 23 and 26. Turning to fig. 25, it will be seen how these spokes cross from front

## • Samson Oil-Rite Windmills •

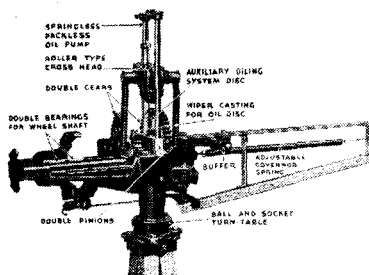


Specifications for 4, 6, 8, 9, 10 and 12 ft. (Model M) with F

Model	Capacity	Height	Weight	Price
4 ft.	1/2 gal.	4 ft.	100 lbs.	\$1.00
6 ft.	1 gal.	6 ft.	150 lbs.	\$1.50
8 ft.	1 1/2 gal.	8 ft.	200 lbs.	\$2.00
9 ft.	2 gal.	9 ft.	250 lbs.	\$2.50
10 ft.	2 1/2 gal.	10 ft.	300 lbs.	\$3.00
12 ft.	3 gal.	12 ft.	350 lbs.	\$3.50

Catalog No. 41

## • Samson Oil-Rite Windmills •



SPRINGLESS PACKLESS OIL PUMP  
ROLLER TYPE CROSS HEAD  
DOUBLE BEARINGS FOR WHEEL SHAFT  
AUXILIARY OILING SYSTEM DISC  
WIDER CASTING FOR OIL DISC  
SUPPORTS  
EQUILIBRATING GOVERNOR SPRING  
BALL AND SOCKET TURN TABLE  
DOUBLE PINIONS

# SAMSON WINDMILLS!

## SAMSON OIL RITE WINDMILLS by Stover Mfg. and Engine Co.

Just about every farm in the Midwest and Plains states had a windmill for pumping water back at the turn of the century. Here's the sales catalog for one of the leading manufacturers of those mills.

You'll see the mechanical details: the gears, bearings, vanes, pumps, and the rest. And you'll get complete specifications.

If you're interested in windpower, I would think this would be a great reference, since these were built to perform. I'm sure many are still in operation. If you're going to design your own windmill, it might pay to look at a proven design. And besides the price is right. 8 1/2 x 11 booklet facsimile reprint 22 pages + cover

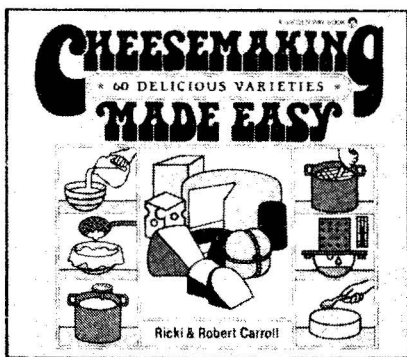
Cat. no. 2011

\$3.00

# Make CHEESE!

# FISH FARMING

# Make SOAP!



## CHEESEMAKING MADE EASY

by Ricki & Robert Carroll

Excellent! There's no other way to describe this new book! I've seen a few other cheese books, but they showed how to make only very simple cheeses. This book shows all!

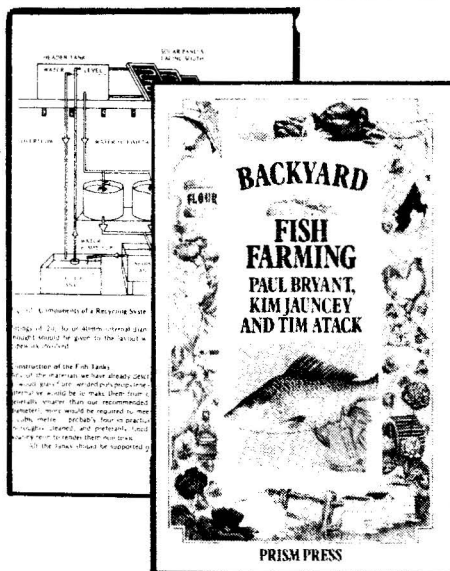
You'll learn how to make all kinds of cheese from cream cheese and Gouda to Cheddar and Blue Cheese. You'll learn about all the steps including ripening, renneting, cutting the curd, cooking, molding, pressing and drying. And it's not really all that hard!

All it takes is milk, pots and pans, and small amounts of rennet and bacteria to make the variety of cheeses. You get addresses for suppliers of the unusual ingredients, and you get plans for a simple cheese press which is the only exotic equipment used.

After you see how easy cheesemaking is, you'll wonder why more people aren't doing it. You can make better cheese for less money by making it yourself. And here's the book that will show you how. I think it's a great book at a very reasonable price. Rare info. 6x9 paperback 135 pages

Cat no. 653

\$6.95



## BACKYARD FISH FARMING

by Bryant, Jauncey, Attack

Sure, you can grow tomatoes, beans and cabbage in the backyard garden, but have you considered raising catfish? Or trout? Now don't tell me you don't like fish. I'm not big on fish, but freshly caught panfish fried in batter is delicious, and with a backyard fishfarm you can have an endless supply of low cost fish.

Here's all the data you need. You'll find loads of drawings, tables and info on water recyclings systems, fish nutrition, diseases, reproduction and more. It's all here. Excellent book.

6x9 paperback 170 pages

No. 637

\$6.95



## The Art of SOAP MAKING

by Marilyn Mohr

If you've never made soap, you should give it a try. At least once. There's something magical in taking cooking fat and grease, mixing it with lye, and turning out top quality soap.

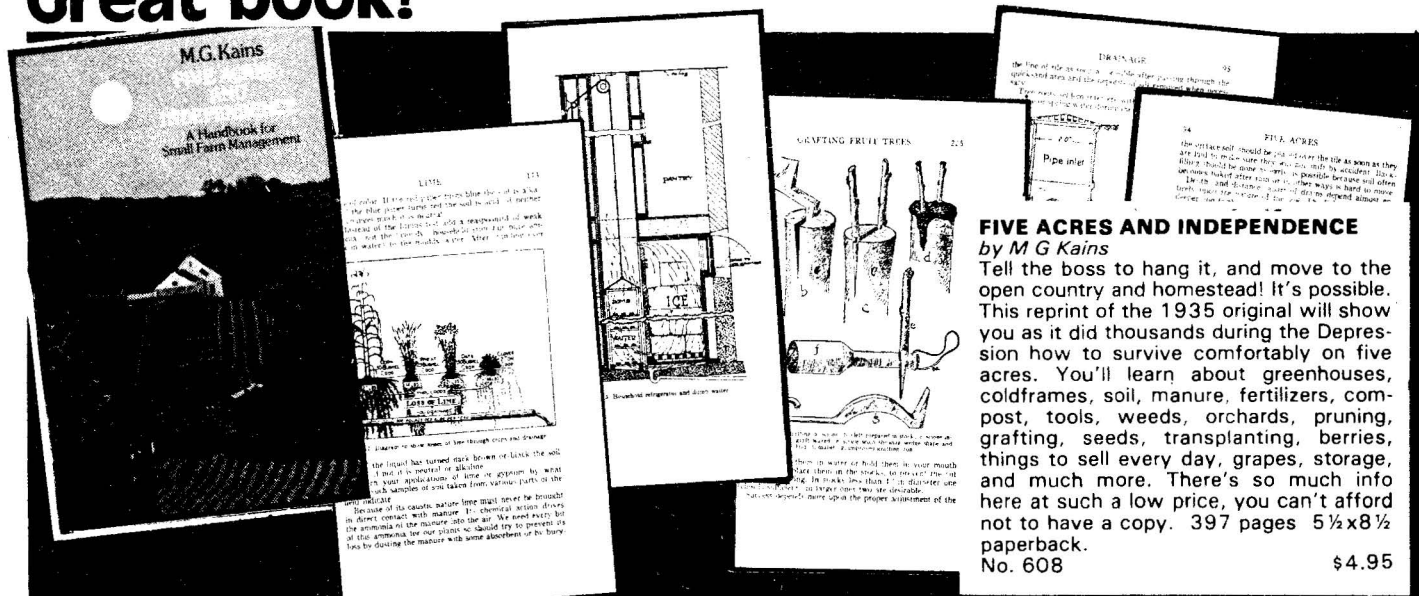
You'll learn the basic steps of saponification (soap making), and then you'll see the recipes for making complexion soaps, cleansing creams, medicated soaps, mechanic's soap, shampoos, leather soap, and much more. This is cheap and simple fun. Discover it!

5x8 1/2 paperback 128 pages

No. 423

\$6.95

# Tell the boss to shove it! Head for the open spaces and homestead! Great book!



## FIVE ACRES AND INDEPENDENCE

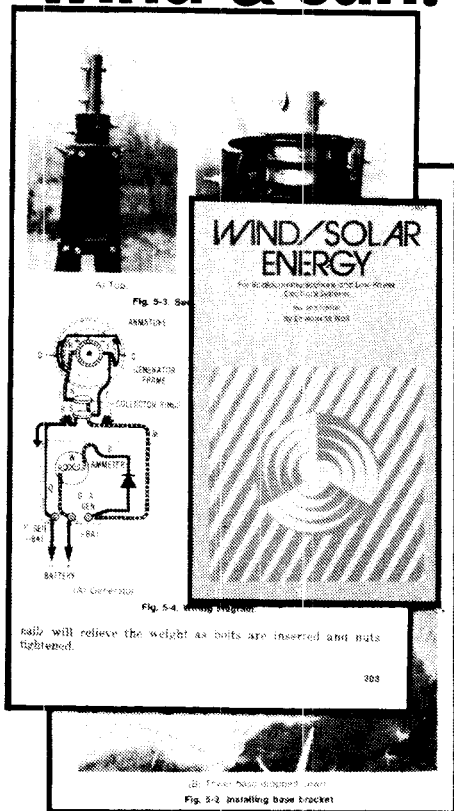
by M.G. Kains

Tell the boss to hang it, and move to the open country and homestead! It's possible. This reprint of the 1935 original will show you as it did thousands during the Depression how to survive comfortably on five acres. You'll learn about greenhouses, coldframes, soil, manure, fertilizers, compost, tools, weeds, orchards, pruning, grafting, seeds, transplanting, berries, things to sell every day, grapes, storage, and much more. There's so much info here at such a low price, you can't afford not to have a copy. 397 pages 5 1/2 x 8 1/2 paperback.

No. 608

\$4.95

# Get electricity from wind & sun!



## WIND/SOLAR ENERGY

by Edward M. Nell

"For radiocommunications and low-power electrical systems." That's what it says. If you're wanting to power your home, run an electric steel furnace, or light up the city of Butte, Montana, fergit it!

If you need a few watts to power your CB radio, or better yet, the computer you have feeding your amateur radio transmitter, then you need this excellent title.

Chapters include: solar cells, wind energy and conversion, batteries and inverters, practical solar power supplies and applications, practical applications and sources of supply. You get detailed information on how generators and alternators work, circuit diagrams of alternator regulators, block and detailed circuit diagrams for inverters and battery charging circuits. You get practical details on the installation of a 200 watt wind charger, a 36 watt roof mount solar cell array, gelled lead-acid cells, ni-cad batteries and much more.

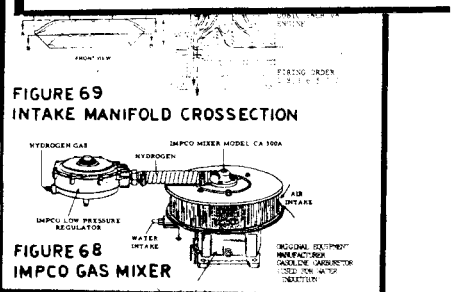
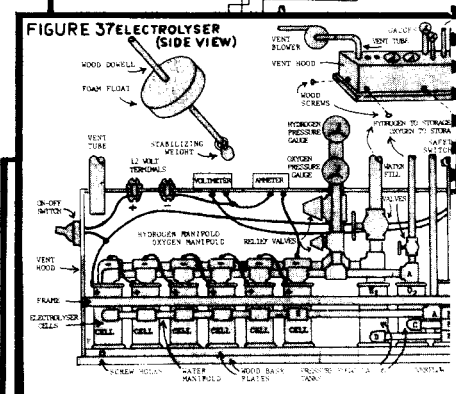
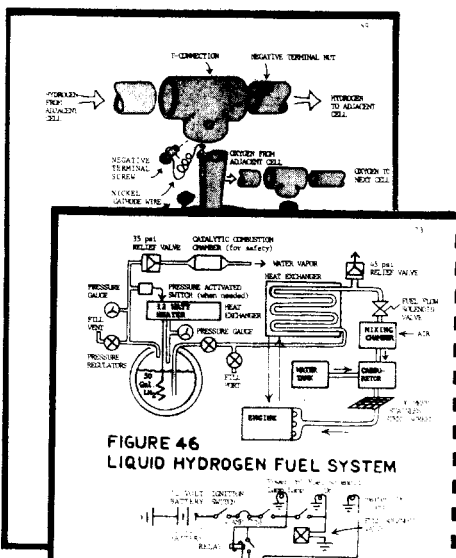
This is an excellent book. It delivers details. If you're just getting going in alternate energy, this is a must book. If you've been studying these topics for a while, you'll find a lot of repeat, but I'll bet you learn a lot of new things, too.

Excellent buy. (Actually you probably could power a small home if your electrical needs are modest.) Like every other book in this catalog, this is one I'd buy myself. A little bit expensive, but better quality than most.

Cat. no. 2016

\$12.95

# Hydrogen-alcohol fuel conversion!



## HYDROGEN Home and Auto Fuel Conversion

by Michael A. Peavey

Here's the best book of its type that I've seen. In a larger revised edition with new material and a 1983 copyright. A big section of this which seems out of place covers batteries and inverters for providing 110VAC for the home without connecting to the local power company. Then you'll read about hydrogen generators, storage devices, modifications of autos for using hydrogen fuel, the hydrogen homestead and more. It's a well illustrated, type-written manual with a plastic spiral binding that presents what is obviously hard-to-find information.

You get lists of manufacturers, other books, and sources of info.

Nicely done. I wish I had more books like this. I think you'll really like it.

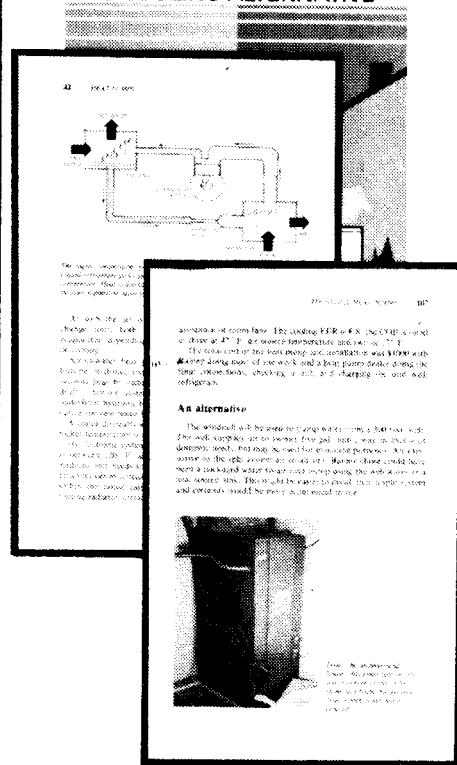
8 1/2 x 11 paperback spiral bound

Cat. no. 2010

\$12.00

# Heat Pumps

## AN EFFICIENT HEATING & COOLING ALTERNATIVE



## HEAT PUMPS

by Dermot McGuigan

Even in the dead of winter, there is warmth outside in the air, in underground water, and in the earth itself. By using what amounts to a backward refrigerator you can pump the warmth into your house. Although your heat pump may be driven by electricity, you'll receive much more heat energy out of the system than electrical energy put in. That's why they're popular.

McGuigan breaks his book into two parts plus appendix: Heat Pumps and Heating, Heat Pump Systems, and misc. details. You'll learn about how the heat pump works, the varieties available, the components and installation. Then you'll learn about air-to-air systems, such as a system in Vermont, a swimming pool system, heat pump water heaters, water well heat sources, a watermill, solar assisted heat pumps, pools and pumps, earth source systems and more.

The appendices discuss thermodynamics, pipes, tax credits, heat storage, refrigerants, and even a manufacturer's index. This is a well-done book especially if you're looking at heat pumps for the first time. Very reasonably priced. I give it good marks. Get a copy. 5 1/2 x 8 1/2 paperback 202 pages

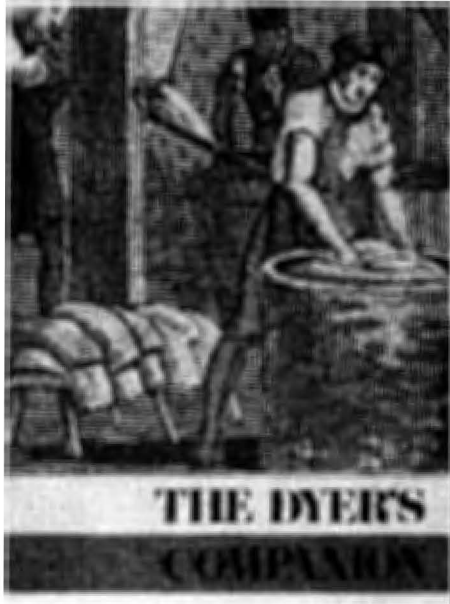
Cat. no. 2013

\$6.95

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We do not substitute books. We send what you order, or we return coupons or refund checks for money not used. Other firms may send you substitutes just so they don't lose an order. We would ask for your okay before substituting. In fact, we'll ask for your okay before we send a book that has gone up significantly in price.

# Formulas Secrets of Log Building! from 1815!

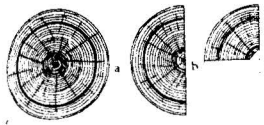
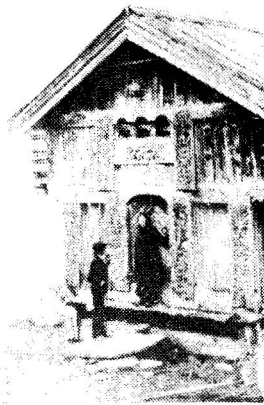


**The Dyer's Companion**  
by Elijah Berniss

Open this reprint of the original 1815 volume, and you'll find formulas for dyes in all shades and varieties of reds, blues, yellows, browns and blacks for woolens, linens and cottons and more. You get details on the vats, equipment, and tools. You'll learn why the different materials and methods were chosen.

The last few pages of the book will even tell you how to brew beer and wine, formulate a cure of dysentery, make jelly, how to lacquer brass, and other unusual recipes.

If you collect unusual secrets from by-gone days, add this to your collection. The price for this lost technology is quite low. Very unusual info at a reasonable price. 5 1/2 x 8 1/2 paperback 312 pages  
Cat. no. 453 \$4.50

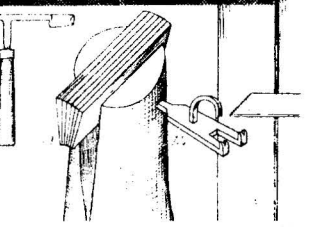
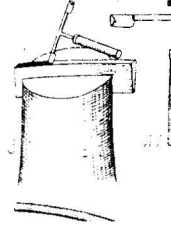
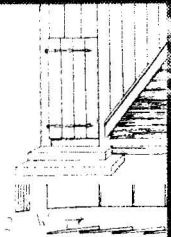
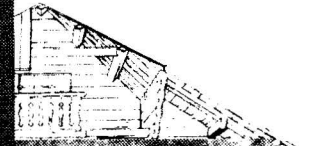
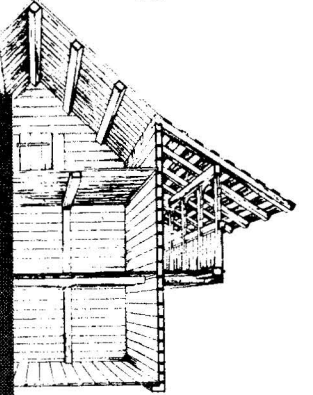
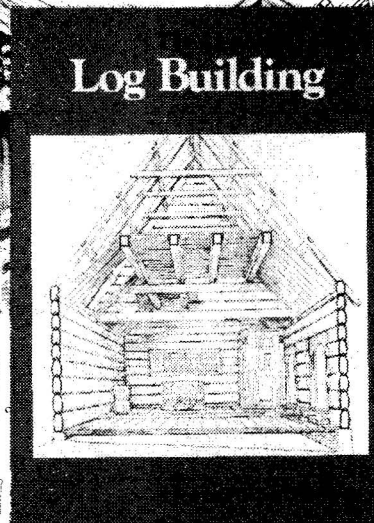


**THE CRAFT OF LOG BUILDING**  
by Hermann Phleps

Are you considering building a log house? Then consider this! With beautiful illustrations and detailed copy you'll learn the European secrets of building with logs — and you know how long they've been at it...

Contents include felling timber, wall construction, corner work, tying in partition walls, pegging and doweling, stub walls and vertical tie-logs, sill construction, thatched roofs, sheaf-thatched roofs, wooden roofing, boarded roofs, Scandinavian door framing, moulded contouring, and much, much more.

You'll find all kinds of secrets not found in North American log building texts. Originally published in Germany in 1942, you'll find unusual references to such things as native woods in Switzerland and Transylvania! Loaded with photos and drawings. A must book for anyone who's going to build. Somewhat expensive, but it delivers. 8 1/2 x 11 paperback 328 pages  
Cat. no. 698 \$19.95



## Build your wilderness house from stone!



**STONEBUILDER'S PRIMER**  
by Charles K. Long

Forget building your house with straw or wood. Use stone! No wolf will ever huff-and-puff it down!

Seriously, build your house with stone. Not only is it relatively low cost, but it's durable and low in maintenance. And best of all, you can do it yourself!

Chapters include the myth of stone, plans, footings and foundations, framing, tools and suppliers, stone, laying stone, arches, special touches, fireplaces and chimneys, and variations.

You get beautifully clear drawings and lots of detailed photos. The Canadian authors pull from their experience and deliver details — real meat. And it's not that hard! "It must be more complicated than that," is the frequently heard comment of visitors to the author's homestead... You'll learn their "compromise method" that is simpler and truer than the popular slipform construction method.

Get a copy of this. You'll need it when you build that cabin or homestead out in the wilderness. Excellent book. 8 1/2 x 11 paperback 128 pages  
Cat. no. 696 \$11.95

# HOW TO MAKE YOUR OWN SODA POP!

Also on the Hires instruction sheet is this recipe for a low calorie drink:  
One 3 oz. bottle of Hires Extract  
6 oz. granulated sugar  
4 1/2 gallons lukewarm water  
1 teaspoon yeast

The sugar is needed to create the alcohol and carbon dioxide. Just before drinking, you're supposed to mix in an artificial sweetening agent. I would guess that the agent, such as saccharin, cannot be added directly before bottling because it could interfere with fermentation. With the carbonator head though, the sugar could be totally eliminated and the artificial sweetener added directly to the solution. You'll have to experiment.

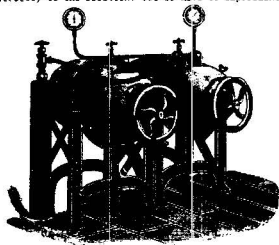


FIG. 210—Liquid Carbonator Assembly Attached to Stationary Footpump

Fig. 210 indicates the manner in which the flask of "liquid carbonate" is attached to the mixing-cylinders. The trouble encountered from the contents of the flask flowing up—from its too rapid carbonation—is overcome by attaching several flasks to one set of mixing-cylinders, and regulating the flow by a reducing valve.

**Belfast Ginger Ale.**—The great popularity of the Belfast ginger ale is principally due to its fine aroma. All carbonators strive to imitate it as closely as possible, but it is an unfortunate fact, however, that a great deal of American ginger ale is "miserable stuff," in many instances nothing more than sweetened water.

In properly combining various flavors and creating a new harmonious single aroma, lies the secret of manufacturing ginger ale, be it made in Belfast or anywhere else; but sometimes the flavoring is so strong, added to such an excess, as to rob the beverage of its chief merit—the ginger

## SODA POP

by T. J. Lindsay

Make your own soda! You can! And it's great soda! Even better when you consider that it will cost you a fraction of what you get in the supermarket.

You can build this remarkably simple device using hardware store components, hook it to a bottle of carbon dioxide, and you're in business. The major expense will be a deposit on the CO<sub>2</sub> tank, and the regulator if you have to buy one. But you'll quickly recover that cost in a single summer.

You can make dynamite root beer, carbonate Kool-Aid (not bad at all), even Coca-Cola, Pepsi and Seven-Up at bargain prices. You can make gallon after gallon of soda water for ice cream sodas or mixing with your favorite scotch. Experiment!

It's really easy to build the carbonator head, and equally easy to operate. It's one of the most useful (and popular) machines I've ever built. If you're a soda freak, or have a house full of kids, you can provide immensely satisfying carbonated drinks at practically no increase in cost. (A single small tank of CO<sub>2</sub> lasts me about a year, and that's an ocean of soda!)

Experiment! I wonder what carbonated milk, tomato juice, or chicken soup would taste like? . . . on second thought, just stick to soda pop.

This is the updated improved edition of the Soda Pop book offered several years ago, now at a lower price. Order a copy today. 5 1/2 x 8 1/2 booklet 22 pages  
Cat. no. 88 \$3.00

# Tanning!



## HOME TANNING & LEATHERCRAFT SIMPLIFIED

by Kathy Kellogg

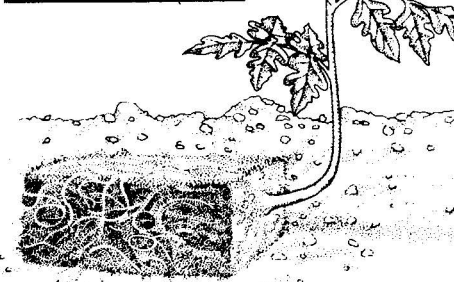
If you hunt, raise animals for their meat, trap or are just collecting the information you'll need when you move to that cabin in the wilderness, then you'll find tanning a valuable skill. You can turn rabbits, raccoons, mink, fox, cows, hogs, sheep, even skunks into everything from belts to fur lined mittens and slippers.

You get brief but to the point instructions and tips on converting hides into raw leather or into furs using a variety of simple methods. Then you get tips on making such things as a simple wallet, belt, mittens, slippers, a coat with tips on cutting, fur matching, sewing and the rest.

This is not an extremely detailed book, but it does deliver another angle on tanning and leathercraft that is missing from a number of other books now on the market. Even if you have a tanning book, give this one serious consideration. A good book at a fair price. 6x9 paperback 192 pages  
Cat. no. 695 \$8.95

# TOMATOES!

Trench planting makes it easy to plant leggy seedlings or those that have



## THE TOTAL TOMATO

by Fred DuBose

At first I thought this was a book about one of my in-laws, or a book about me written by a former employee. But it really is about tomatoes — a book for the guy who would rather plant a thousand tomato plants and baby them than watch a football game, work on the car, build a new machine shop tool, or suck suds at the local pub.

"Total" is broken into three parts. First, you get tomato history and lore. Second, you get ratings of over 300 varieties of the usually red fruit based on yield, disease resistance and taste. Finally, you get all the "secrets" of making them produce: starting, planting, staking, pruning, and so on.

If you know anyone who's addicted to growing more tomatoes than he can possibly eat, then you know why this book was written. You ought to try it. Get a copy of this. Grow some. (Make some spaghetti sauce, and send me a sample.) An unusual book. If you like tomatoes, you should find this book interesting. 6x9 paperback 206 pages  
Cat. no. 694 \$8.95

## HOW TO STAY ALIVE IN THE WOODS

by Bradford Angier

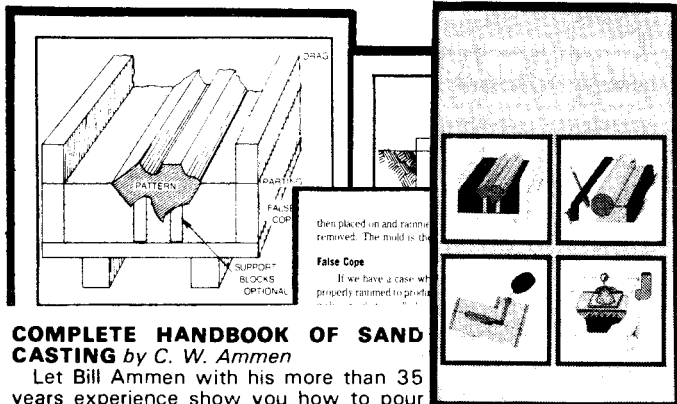
For over twenty years, sportsmen, hunters, and camping families have been carrying this book with them every time they venture into the woods. It is a life-saving tool which details all of nature's resources and shows — in 26 clearly written, illustrated chapters — how to find food, water, warmth, and shelter when lost or stranded.

The book is full of secrets that can help save time, energy — and even lives. For example, it tells: how to spark a fire by using a drop of water as a lens; how to obtain meat and fish by primitive means; and how to protect yourself against natural hazards.

That pretty well says it, this "drug-store" paperback is wall-to-wall practical tips and how-to. Lots of quality information for a low price. 4x7 mass paperback 285 pages  
Cat. no. 682 \$4.95

# Cast Small Parts

## Quality casting books reveal hard-to-find data...



### COMPLETE HANDBOOK OF SAND CASTING by C. W. Ammen

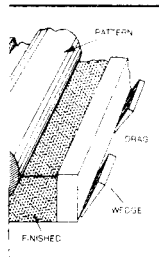
Let Bill Ammen with his more than 35 years experience show you how to pour professional castings in sand molds. Learn about molding sand mixes, tools, mold making equipment, patterns, cores and core boxes, bench molding, floor molding, gates, sprues, risers, proper casting design, non-ferrous melting furnaces using coke, oil, and gas, and a 12 inch cupola furnace that can melt more than half a ton of cast iron per hour.

Here's solid advanced information for the guy who wants to improve his castings and move on to more complex fields. Ammen also comments on starting a foundry business.

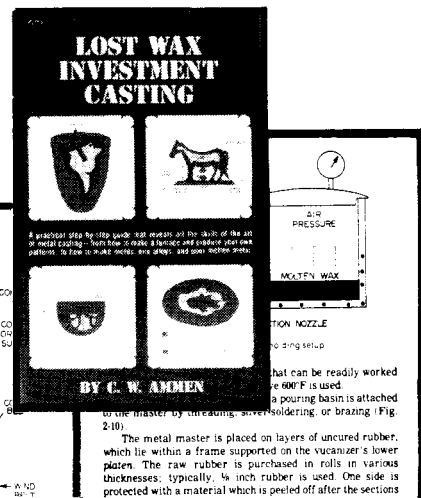
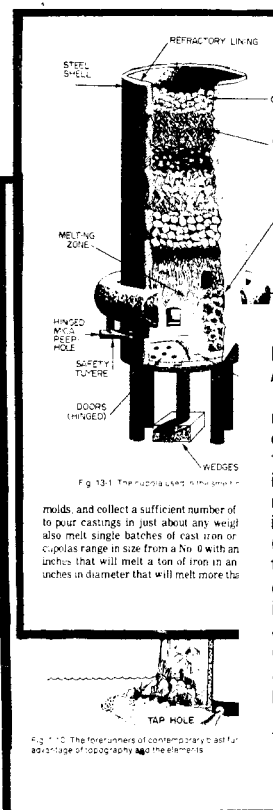
Good book. Thousands have already been printed and sold! 5x8 238 pages well illustrated. No. 116

\$9.95

First in the sand rammer (Fig. 10). The entire assembly is clamped bed. The clamps are removed, the void. This leaves the drag properly re-used is shaken out, the empty 3 rammed as usual. What we have



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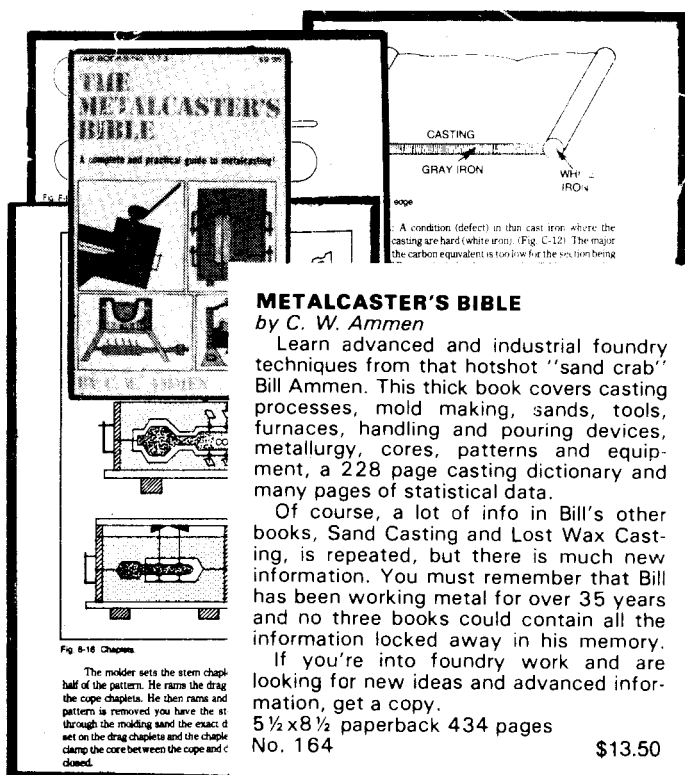


### LOST WAX INVESTMENT CASTING by C. W. Ammen

Learn about pattern making, gates and risers, investment molds, dewaxing and calcining, furnaces and metal pouring, non-ferrous casting metals, handling and pouring equipment, degating, chasing and repairs. Two additional chapters describe in detail how to build a cupola furnace (miniature blast furnace) that will melt, at the very least, cast iron and how to use casting methods such as green sand casting, carbon dioxide casting, die casting, and slush casting. Four appendices also give you much more valuable information. A bundle of information at a reasonable price!

5x8 paperback 178 pages, drawings, tables, and addresses No. 18

\$9.25



### METALCASTER'S BIBLE by C. W. Ammen

Learn advanced and industrial foundry techniques from that hotshot "sand crab" Bill Ammen. This thick book covers casting processes, mold making, sands, tools, furnaces, handling and pouring devices, metallurgy, cores, patterns and equipment, a 228 page casting dictionary and many pages of statistical data.

Of course, a lot of info in Bill's other books, Sand Casting and Lost Wax Casting, is repeated, but there is much new information. You must remember that Bill has been working metal for over 35 years and no three books could contain all the information locked away in his memory.

If you're into foundry work and are looking for new ideas and advanced information, get a copy.

5 1/2 x 8 1/2 paperback 434 pages No. 164

\$13.50



### HOW TO CAST SMALL METAL & RUBBER PARTS by W. A. Cannon

Restorers of old autos and users of small specialized castings take note! You'll find all you need to know about reproducing both metal and rubber castings. You'll find chapters on six casting methods, alloys, equipment you can make, molding sands, fluxes, degassers, and flasks. Learn how to make molds and pour. Learn about a remarkable rubber substitute and how to use it to make grommets, pads and stripping. Learn how to mold from damaged or defective molds. Lots more. A good book on an unusual topic.

5 1/2 x 8 1/2 144 pages No. 117

\$8.95

# Learn sand casting secrets from this absolutely incredible reprint!

Beautifully illustrated....



**Making Three-Part Molds in Two-Part Flasks.**

A three-part mold may be made in a two-part flask by having an intermediate body of sand between the cope and the

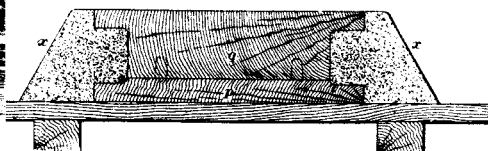


FIG. 8.

This is illustrated in Figs. 8 to 10, in which

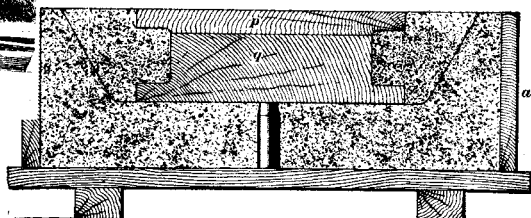


FIG. 9.

pattern described in Art. 3 is used. The pattern is

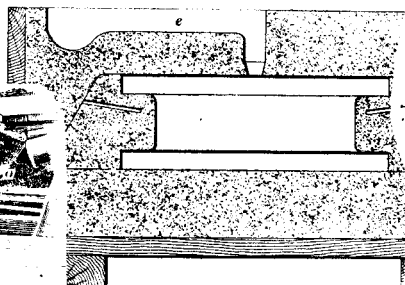


FIG. 10.



**GREEN-SAND  
CASTING**

## GREEN-SAND CASTING reprinted by Lindsay Publications

So now you've built a cupola or small furnace and you have a ladle of molten iron or aluminum. Now what are you going to do with it? You can't very well pour it into a cake pan, bread box or an old boot. You've got to pour it into a sand mold where it will freeze into a useful casting.

You probably already realize that making green-sand molds (the sand isn't really green, just wet) is more of an art than a science. Where to put sprues and runners, vents for steam and gas, and just how hard to ram up the sand are skills that come only with practice.

Old timers will tell you that you can't really learn green-sand molding from a book, and they're probably right. But this book comes as close to revealing the secrets as any I've seen. When you see the gorgeous illustrations, you'll agree.

This is a reprint from a 1903 technical school textbook. It will show you step-by-step the tools and materials and how they're used to ram up molds. Discussions include sands, tempering, sieves and riddles, rammers, required hardness, deep molds and venting, drawing the pattern, closing and pouring, shaking out the casting, and much more. Other books usually stop right there. But this book is just getting started.

Part 2 concerns molding by bedding in — a technique in which you build the mold right on the foundry floor in a pile of sand. It's quite a skill to level and set up such a mold. You'll read and see how soft and hard beds are formed up, how the molding plates are hammered in, how beds are made and vented for cope molds. There are discussions on bottom projecting cores, rodding of projections, clamping and weighting the mold, methods of computing weights, mold clamps and more.

Part 3 specializes in molds for casting iron. You get rare illustrated how-to on making joints for irregular forms, three-part molds in three-part flasks, three-part molds in two-part flasks, follow boards in forming joints, plaster-of-paris matches, match plates, gagers and soldiers, setting of cross bars, nails and rods at joints and corners, valuable lessons on patching molds, swabbing broken corners, sleeking and printing dry blackening, skin-dried molds, types of gates and pouring basins and more.

Part 4 is more of the same: chaplets, problems such as blowholes, shrink holes, shrinking and contraction, techniques of proper feeding, bench molding with different type of snap flasks, and on and on.

Most of what you learn in this book is on a slightly larger scale than what a home foundryman might need. But the techniques are exactly the same. The illustrations are dynamite! You won't just be told how it was done, you'll see for yourself.

All I've ever poured is aluminum using Dave Gingery's charcoal foundry. If you've ever tried it, you'll know how much fun it is and how quickly you get hooked on it. You ram up a mold, melt down some aluminum cans and scrap and make a pour. No matter how good a casting is, you'll want to make it better and more complicated next time. But how can you make such improvements? The answers are right here in this book.

I see a great many old foundry and machine shop books every month. They're all interesting, but few have excited me like this sand casting book. Probably, because having casted aluminum, I appreciate how valuable and rare this information is. I just couldn't wait to reprint it.

If you have or ever intend to pour aluminum, brass, or iron, you should have a copy of this. It is a must book for the foundryman. This is a gem, and I can't give it a higher recommendation.

5 1/2 x 8 1/2 paperback 174 pages  
Cat. no. 4082

\$8.95

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# Patternmaking 1905!

## PATTERN MAKING 1905

reprinted by Lindsay Publications

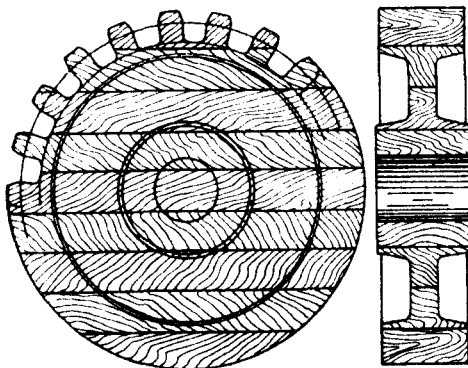
The easiest way to work metal is not to work it at all. What you do is create the metal part you need from soft, easy-to-work wood. Then you use this wooden part, called the pattern, to create a cavity in a sand mold into which molten metal is poured. When the casting cools, you have the metal part you need, without all the hassle of complicated machining.

Pattern making is both an art and science. The ultimate quality of the casting is dependent on the quality of the pattern, and that is why so much work is put into making the best patterns possible.

Now you can learn pattern making as it was practiced at the turn of the century as revealed in this newly published reprint. Extracted from "Modern Engineering Practice" originally published by American School of Correspondence in 1905 and authored by a committee of experts, you'll learn all the essential skills needed.

Learn about wood and its qualities, all the wood working tools needed to form it, the basics of molding, construction of core boxes, multi-piece patterns, and making patterns from drawings.

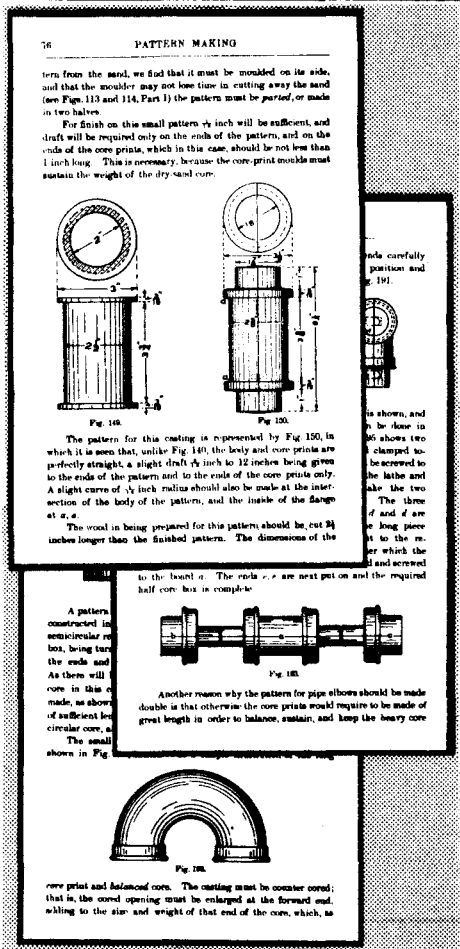
Part II reveals the techniques of making simple patterns such as core boxes, finishing techniques, jointing techniques, built up patterns for pulleys, wheels, and wheel spokes. The details of gluing, turning and finishing are covered completely. Learn about metal patterns, rapping plates, fillets, patterns for lathe face plates, pipe fittings, engine cylinders, gear wheels, columns and much more.



Foundries are usually concerned with three areas: furnaces and melting, molding techniques, and patternmaking. The first two topics are covered in detail in many books found elsewhere in this catalog. Pattern making is rarely discussed anymore. About the only books available are out-of-print. Until now.

How on earth would you make a pattern with the complex cores needed to cast a globe valve? You'll find out right here. I'll probably never cast a globe valve, but what I've learned just reading this has greatly expanded the capability of my small charcoal foundry.

If you pour metal, then you should have this book on pattern making. Old or new, this is one of the best I've seen. Recommended. 5 1/2 x 8 1/2 144 pages heavily illustrated Cat No. 4031 \$8.95



# Learn the secrets of making cores!

## CORE-MAKING, DRY-SAND & LOAM MOLDING

reprinted by Lindsay Publications

How do they get hollow water jackets in castiron and aluminum automobile engine blocks? ... with cores. That's also the way you put steam passages into cylinders and valves, shaft holes in flywheels, and complicated hollow spots in a variety of castings.

Cores reduce the amount of metal you must melt and the resulting casting weight, and probably more important for industry, they reduce the amount of metal that must be removed in machining, thereby reducing cost.

Get a short but complete course in fabricating cores. Learn about the various types, swept green-sand cores, making green-sand cores in boxes, making core arbors and square cores, differences between dry- and green-sand cores. See the correct way to ram cores with central vents. Learn about rodless round cores, making small cores in formers, pasting cores, daubing joints, blackening cores, rodding or barring cores, venting cores, drying crooked cores, and more.

Learn about the binders: rosin binder, glue and water, linseed oil, and others. You'll get a number of recipes for the more popular core mixes. Learn about blackenings and how they should be mixed.

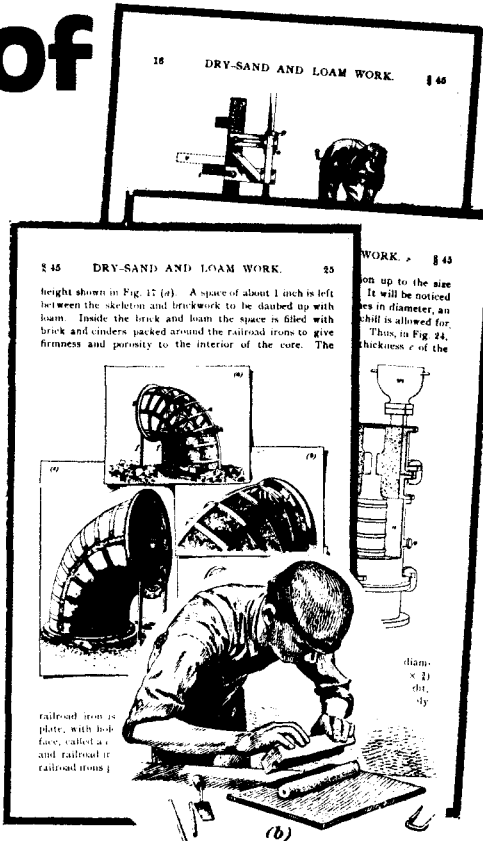
Next, learn about dry-sand molds, that is, molds that are baked after molding. They need little venting, fewer gagers, fewer flask bars, etc. Most of the general molding techniques hold, so only the techniques unique to dry-sand molds are covered.

Finally, learn about loam work. Here, you build the mold on the foundry floor using loam, sand, bricks, metal skeletons, and other things. This technique is most often used for very large castings, and although this may not have much everyday use for the amateur, there are still details that could prove quite useful in other ways.

You'll see how general molds are made, swept, and cored. You'll see how a huge pipe elbow is molded with a metal skeleton. Also covered is blackenings, venting, gating, and pouring.

As a bonus, there's a brief section on making chilled castings.

Admittedly, some of this information is highly specialized. Even so, core making is something every amateur foundryman should know. This is another turn-of-the-century textbook reprint that should be on your reference shelf. Good content. Reasonable price. Great illustrations. Get a copy. 5 1/2 x 8 1/2 paperback 96 pages Cat. no. 4112 \$6.50



# Advanced Patternmaking

Learn how to cast valves, steam engine parts, flywheels, and much more in this great reprint!

## ADVANCED PATTERN MAKING

reprinted by Lindsay Publications

Patternmaking is probably the most important step in producing high quality castings. And you probably know that minor changes in shape or fillets can radically change the strength and utility of the casting.

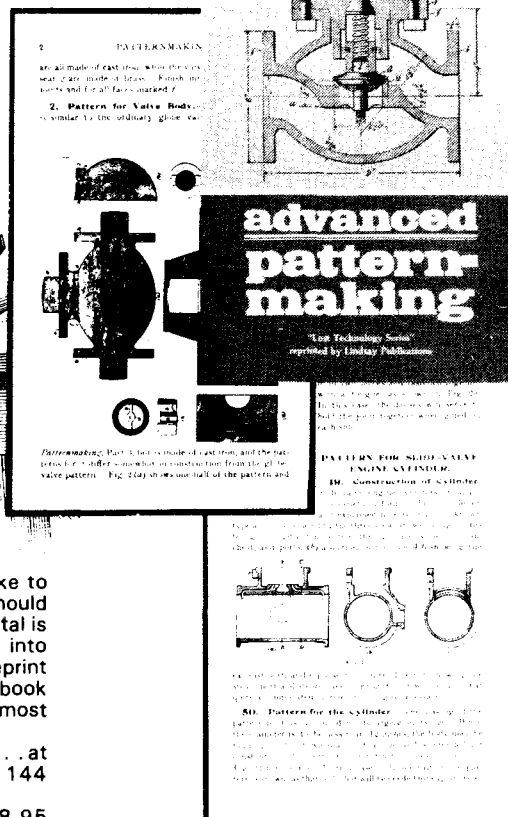
"Advanced Patternmaking" picks up where "Patternmaking 1905" leaves off. You get dozens of examples demonstrating the techniques of skeleton patterns, green-sand and loam patterns for large pipe bends, patterns and core boxes for globe valves and three-way cocks. You'll see patterns for wheels and gears with four arms, web plates, and six or more arms. See a pattern for a shaft coupling.

Some of the more interesting examples you'll see are the patterns for steam engines: cylinder head and cover, disk crank, steam chest cover, Corliss engine valve gear and slide-valve engine cylinder.

In the next of the three sections you'll find a stop or throttle valve, special three-way cock, small bell, patterns and core boxes for casting chain, spur gear and rack, miter and bevel gear patterns, worm and worm gears, and hollow arm flywheels.

Finally, the last section will show you such complicated things as patterns for screw propellers and incredible intricate carved patterns for castiron parlor and cook stoves. Making stove patterns is an incredible skill, and this is the only place I've ever seen it taught.

Each example is accompanied with descriptive text, telling you how the patterns are made where it isn't obvious, how to make the core boxes where needed, and how the pattern is used to ram up the mold.



If you're into foundrywork or would like to try it in the future, here's a book you should have on your reference shelf. Melting metal is one thing, but turning molten metal into something useful is another. And this reprint of a 1903 correspondence school textbook will reveal tricks of the trade that are almost impossible to learn elsewhere.

A great book with great illustrations! . . . at a reasonable price. 5 1/2 x 8 1/2 paperback 144 pages

Cat. no. 4090

\$8.95

## Foundry Materials Handbook!

### FOUNDRY MATERIALS 1917

reprinted by Lindsay Publications

After you've decided to clean out a corner of the garage and build a foundry, you've got to gather the equipment and supplies. This reprint of a section of a 1917 text will show you what you need - not that expensive high tech stuff, but the low cost low tech supplies that worked so well for so long.

Learn about charcoal, coke, gas, oil, firebrick, fireclay, other refractories, and more. A big section on sand, core sand, binders, fluxes, facing materials, backings and more follows. You'll also learn about scrap castiron and how to identify various types.

You'll find great detail that is often glossed over in other foundry books. Excellent price for such specialized information. Get a copy. 5 1/2 x 8 1/2 paperback 120 pages

Cat. no. 4015

\$4.95

## Secrets of melting aluminum!

### CASTING ALUMINUM

by C. W. "Bill" Ammen

Hey! This is one of Ammen's best books. There's more useful info. for the home metal worker in this book than in most of the others he's written.

You'll find detailed info. on aluminum alloys, melting furnaces and devices, fuels, furnace refractories, melting and fluxing aluminum, foundry practices, casting defects, heat treatment, aluminum alloys, and more.

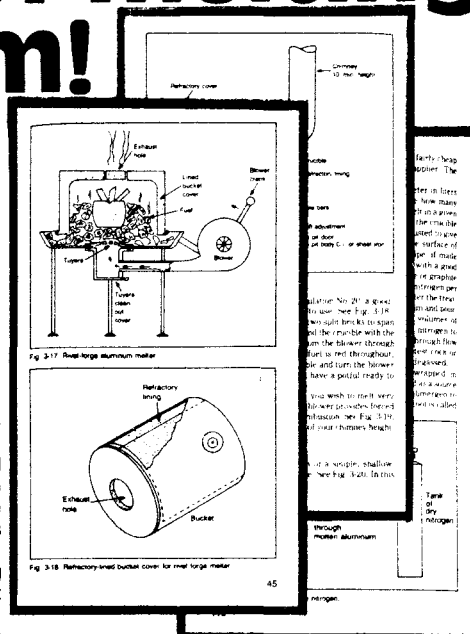
You'll find many, many illustrations. Yes, I'm afraid they're in the same ol' comic book style like Bill's other books. But that's the publisher's fault, not Bill's. No matter. The information is solid and useful.

After you've built a simple furnace and tried your hand at casting aluminum, you could very well want to build a larger furnace and bring your skill to a professional level. This is the book that will help you do it.

It's not cheap, but if you're into melting metal, this book is worth having. Consider it seriously. 5 1/2 x 8 1/2 paperback 242 pages

Cat. no. 1244

\$11.95



# Blowpipe Analysis

## BLOWPIPE ANALYSIS

by J. Landauer

reprinted by Lindsay Publications

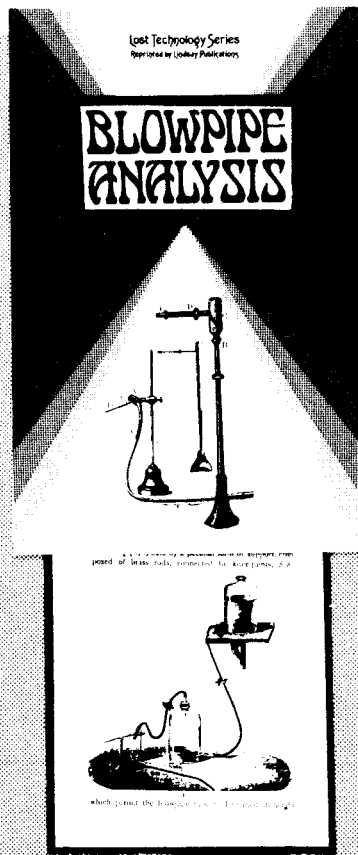
Blowpipe analysis? Sure! You use a blowpipe to force a flame into contact with an unknown substance. From the colors of the flame, the substance and the residue you can determine what elements are present in the sample — elements from gold to arsenic.

Before gas chromatographs and mass spectrometers, prospectors, chemists, and experimenters used this very simple analysis method. This book first issued in 1879, updated in 1892, reveals techniques that today are rarely seen or used, and much less often taught to novices.

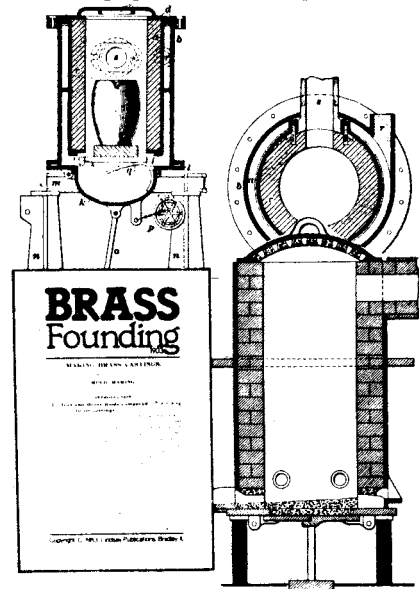
Think about it. You can use this method to determine if precious metals are present in scrap before attempting recovery. Prospectors often checked ores this way because the test was quite reliable, even though the equipment was very lightweight and inexpensive. I wouldn't guarantee it, but I wonder if this technique couldn't be used to detect heavy metals and poisons in our water and food. It might be something to look into.

In other words, here's a very simple chemical analysis technique that almost anyone can use to check for antimony, boron, chromium, cobalt, gold, lead, manganese, mercury, molybdenum, silver, uranium and much more. If your suspicions are confirmed, then you can submit samples to lab for detailed analysis.

This is a great little book with rare info. If you are at all into this type of work, a copy for your reference library is recommended. 5½x8½ paperback 188 pages  
Cat. no. 4198 \$8.95



# BRASS! Learn to cast it!



## BRASS FOUNDING

reprinted by Lindsay Publications

Brass! That beautiful alloy of copper and zinc! It's beautiful to machine and behold, but not always so beautiful to cast.

Most of the same techniques used to pour aluminum and cast iron are used, but there are some significant changes that must be observed if the best brass castings are to be produced. This reprint of a chapter from a 1903 technical school textbook discusses most of the differences you should know about.

You'll cover such topics as sand for brass work, blackenings and partings, contraction, gating and feeding, cleaning of castings in tumbling barrels and with pickling, the crucible furnace, a simple brass furnace, brass furnaces in a battery, increasing the speed of the melt, combined cupola and crucible furnace, oil burning furnaces, care of crucibles, size and capacity of crucibles and more.

You get valuable information on melting copper and old brass, adjusting and handling the crucible, precautions and prevention of oxidation during melting, use of deoxidizing fluxes, and more.

All the varieties of copper-tin alloys are discussed. You'll read about gun metal, differences in brass and bronze, copper and zinc alloys, lead and copper alloys, manganese and bismuth additions, antimony and babbitt metals, phosphorus and phosphor bronze. You'll also learn how to grade scrap brass, borings and turnings for melting.

Certainly, you can find much of this same information in other books, but were those other books published in 1903? That's the beauty of this publication. It's a reprint, and that means you learn from the people who could produce top grade work back then without complicated high technology equipment.

Not every body needs to melt brass all the time, but when you decide it's time, make sure you have a copy of this rare information on hand. Order a copy now.

39 pages 5½x8½

Cat. no. 868

\$4.00

# Make charcoal & coke!

## MAKING CHARCOAL AND COKE

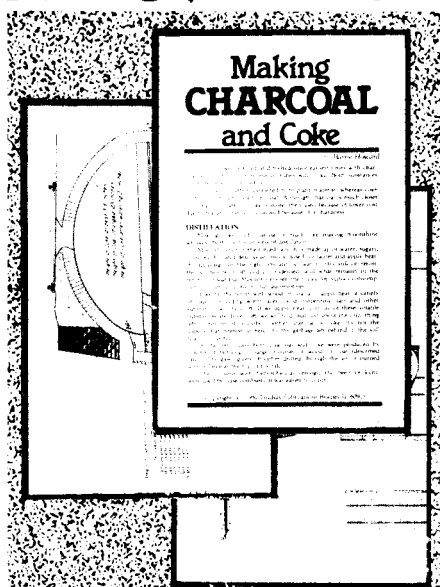
by Barrie Howard

If you have plenty of wood, you can easily turn it into charcoal to fire the charcoal foundry, melt cast iron, or even refine iron ore like they did a century ago.

The first part of this booklet tells you the basics involved in building a charcoal retort, a very simple device that will turn wood to charcoal very efficiently. You'll be shown the important principles and how to operate the retort. You won't get nut-and-bolt instructions, because you'll probably have better ideas of your own depending on what kind of materials you can scavenge. The design is not critical and that means you can cut costs by using old barrels or drums, or even an old woodstove. This info is worth the price of the booklet alone.

Next, you get reprints from an 1895 encyclopedia detailing the process of making charcoal and coke. You'll learn which woods produce what types of charcoal. You'll learn how these fuels were made even in the most primitive countries. You'll learn how even sugar can be turned into charcoal.

Pages from another book, published about 1905, will show you how coal was originally "coaked" in large piles much like charcoal, and later in bee-hive kilns. Detailed cross sections, operating diagrams, and test results will give you valuable information should you choose to develop your own coking process.



Valuable information at a low price. A must for foundrymen. An essential companion to Gingery's "Charcoal Foundry".

5½x8½ 23 pages

Cat No. 858

\$3.00

Lindsay Publications Inc, PO Box 12, Bradley IL 60915-0012

# LIL BERTHA

## "LIL BERTHA" Electric Furnace

by Dave Gingery

Melting aluminum and other low temperature metals with charcoal is fun and easy. But in all honesty, having to fire it out in the driveway or backyard is a pain. And having to stock charcoal is no fun, either.

So let Dave show you how to melt with electricity! If you have good ventilation and are careful, you can melt in the garage even if it is pouring down rain! Electricity isn't cheap, but it's no more expensive than charcoal, and it's right there in the wall, all you need. Best of all, you can dial up the heat you need on this great little furnace, put the metal in the crucible and go ram up your molds. The furnace will practically watch itself. The metal will melt, and then sit there at pouring temperature until you're ready — simply because it is thermostatically controlled.

You can build a high performance electric furnace that will run at 1800° practically forever, thermostatically controlled, in just about any size you'd like for very little money. It is surprisingly easy.

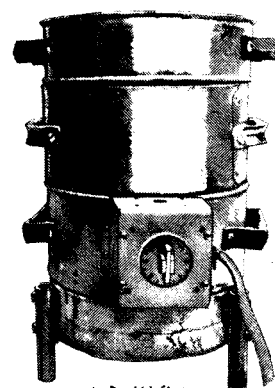
Not only that, you can use Lil Bertha to calcine investment molds, carburize and heat treat metal, forge, temper, anneal, enamel, fire ceramics, and many other tasks. If you go to the trouble of getting a harder-to-find electric element, you can fire up to 2300° for extended periods making this furnace ideal for melting brass!

Dave will show you how to design a unit to fit your needs, where to get and how to handle crucibles, make the electrical calculations, and more. If you've seen any other of Dave Gingery's books, then you know how high a quality this book is. Jam packed with practical how-to. Order a copy. 5½x8½ paperback 67 pages  
Cat. no. 4163

\$7.95



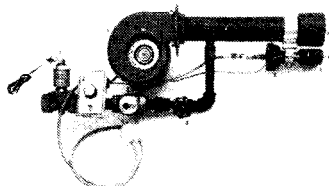
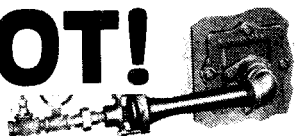
## LIL BERTHA A Compact Electric Resistance Shop Furnace



by David J. Gingery

LINDSAY PUBLICATIONS

## RED HOT!



## Build and use efficient kilns

### ENERGY EFFICIENT POTTER

by Regis C. Brodie

Grab this! This is the best kiln book I've ever seen (and I've seen quite a few). You'll learn how to build a kiln and fire it economically.

Yes, this is written for those who work ceramics and make pottery. But if you're into high temperature work whether for heat treatment, foundry, making glass, or whatever, this is a must book. You'll get more meat, more details on refractories, burners, fuels, and the like in this one book that you usually find in a dozen.

Chapters include: building kilns, insulating existing kilns, commercially manufactured fiber kilns, efficient firing, fuels, health hazards, working methods, and more. Loaded with pictures of burners, blowers, refractories, construction methods, forms, molds, techniques, electrical diagrams, even innovative techniques such as firing with sawdust and the recovery of waste heat.

Top rate. No two ways about it. Worth more than the asking price. Order a copy. 9x12 paperback 206 pages  
Cat. no. 446

\$12.95

# Secrets of the cupola!

## SECRETS OF THE CUPOLA FURNACE

reprinted by Lindsay Publications

To melt castiron, a cupola is often the most economical and easiest furnace to use. That you probably know. But do you know how to operate a cupola? How it's built?

Here is a collection of chapters from three different books. First, from 1872, learn about primitive blast furnaces which are similar to a cupola. You'll discover details on water-cooled tuyeres, hot blast units which save fuel and time, details on use of charcoal fuel, and much more.

A few excellent cross section diagrams of cupolas from a 1912 text follow.

Then from a 1917 text comes 72 pages of detailed instructions on the firing, operation, and maintenance of industrial cupolas. You'll learn from people who actually used furnaces built from the same low cost materials that you and I use today.

You'll want a cupola someday. And this collection of rare information will be a valuable addition to your reference library. Very reasonable price. Order a copy. 5 1/2 x 8 1/2 paperback 170 pages  
Cat. no. 4023 \$6.95

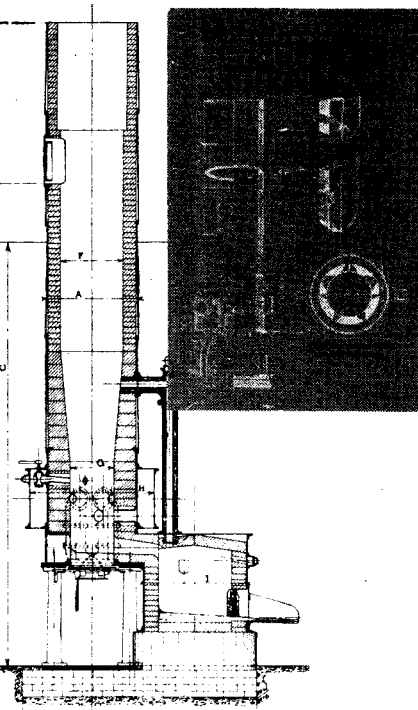
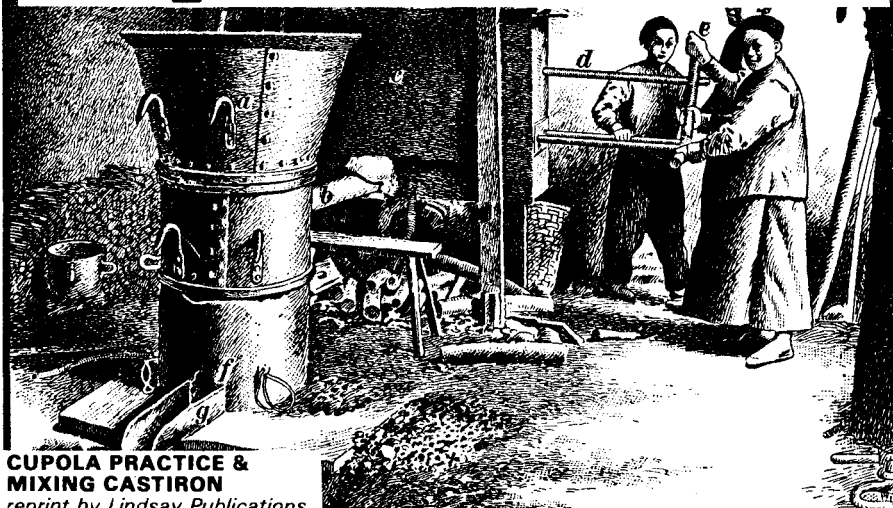


Fig. 183. - Stewart's Rapid Cupola.

# Cupola Practice



## CUPOLA PRACTICE & MIXING CASTIRON

reprint by Lindsay Publications

"Iron has actually been melted in an old flour barrel that was lined with clay and pieces of brick. Iron has been successfully melted in a 12-inch cupola having a blast furnished by a blacksmith bellows. . . ."

You'll learn about firing cupolas in the first 58 pages of this reprint, and the mixing of iron scrap in the last half.

You'll learn about tuyeres, height and position of slag holes, long heats, multiple rows of tuyeres, central tuyeres, construction of charging doors, repairing linings, and more. You get instructions on the firing and operation of the cupola as well. And there's one small, but fascinating section on melting iron in small cupolas.

Mixing castiron is important so that you get the type of metal out that you want. More

than likely, castiron composition has changed in the 80 years that have passed since this was written, but no doubt, there are still at least some useful lessons to be learned.

An interesting book for the cupola operator. Obviously, this has some of the same information as other cupola books, but it has unique information that makes it worthwhile having. If it weren't good, I never would have reprinted it. 5 1/2 x 8 1/2 paperback 128 pages  
Cat. no. 4120 \$7.50

## SPECIAL MONEY-SAVING PACKAGE

Get "Cupola Practice" (4120) and "Secrets of the Cupola Furnace" (4023) for one special price. Save \$2.00.  
Cat. no. 922 \$12.45

# Casting Iron!

## from expert Bill Ammen!

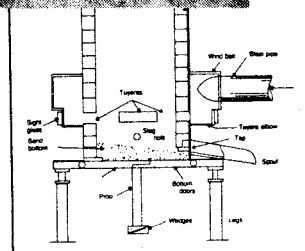
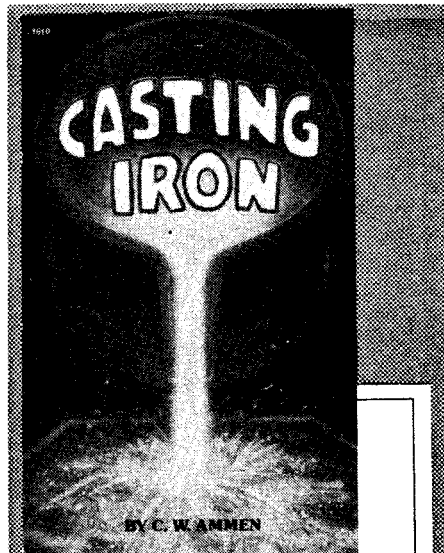


Fig. 4-1. Section through cold blast cupola.

### THE SHELL

The shell's purpose is to hold everything together. How thick this is surely depends upon the size of the stack in diameter and height. For a small cupola, with an outside diameter of 25 inches and an inside diameter, with lining, of 18 inches, a shell thickness of 1/2 inch or 3/16 inch black iron would suffice. 1/2 inch thick this iron would be much more rigid with a longer life. As you climb in height and diameter, it becomes necessary to use heavier material. I wouldn't tackle a homebrew job larger than one with a 46-inch outside diameter.

22

## CASTING IRON

by C. W. "Bill" Ammen

Excellent book! Some of Bill's books are good, and some others seem like repeats. I was expecting more of rehash of his previous books, but that hot-shot Ammen has a goody here. Sure there's repeat, but there's a lot of useful info on melting and pouring cast-iron that makes this book worthwhile.

Chapters include: basics of iron, iron ore dressing, the blast furnace, the cupola, cupola operations, first heat, calculating cast-iron mixes, metallurgy of cast-iron mixes, cast-iron compositions, alternate melting methods, and several appendices.

You get lots of helpful information about designing and building a small cupola for melting the metal. You'll also get info on reverberatory, and rotary furnaces, and a mention of induction furnaces. Lots of drawings.

This is another cheap looking book, but that's not Bill's fault — it's the publisher's. Besides, the information is there, and that's what counts. It's ugly, but it's informative! Get one.

5 1/2 x 8 1/2 paperback 187 pages  
Cat. no. 1202

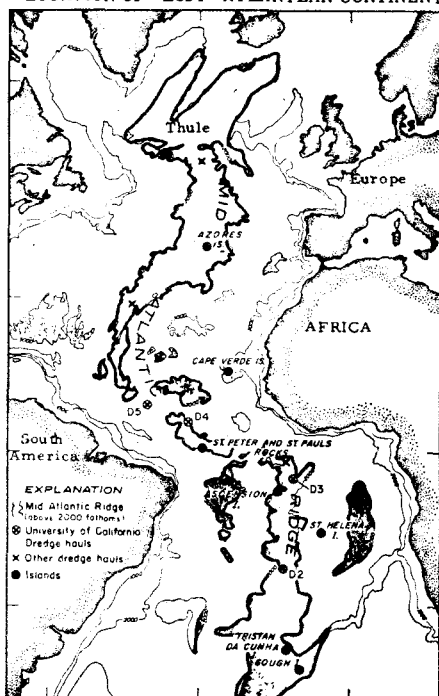
\$10.25



# Lindsay's STRANGE Books

## "Secrets"

LOCATION OF "LOST" ATLANTIC CONTINENT



### ENIGMA FANTASTIQUE

by W. Gordon Allen

copyrighted by Tesla Radiation Inc.

"Why was only a small portion of Dr. Tesla's work permitted to be used by world industry? What were the incredible SECRETS of mind control demonstrated by the life of Nicola Tesla? What do the mind-control secrets of Dr. Tesla and Dr. Rudolf Steiner have in common?..."

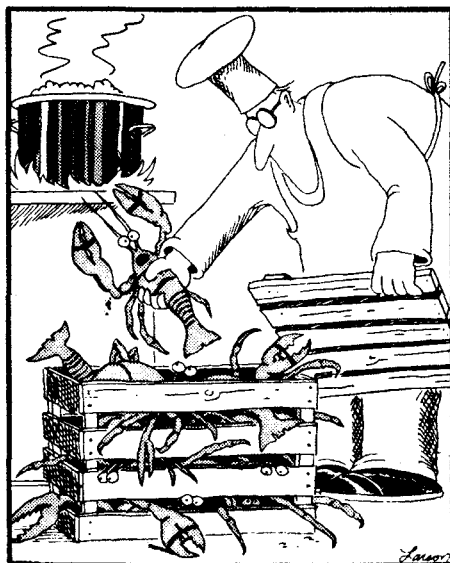
This is another of those strange "revealing" books that declare they have all the answers to why certain inventions, ideas and developments are being "suppressed." You can laugh at it, or take it seriously. Your choice. Personally, I think it's more nonsense like the Bermuda Triangle.

Whatever your point of view, you should find it interesting. You get descriptions of Tesla's ideas of power transfer, Dr. Rudolf Steiner and his strange ideas, Atlantis, UFO's, and a bunch of other things.

Under no circumstances do I endorse any of this nonsense. I offer it only as entertainment, science-fiction, if you like. Although that's my opinion, to each his own. You may think it's fact. You decide.

Spiral bound, 197 page typewritten book with poorly reproduced photos. 8 1/2 x 11  
Cat. no. 724 \$10.00

## Far, far out...



"Auntie Em, Auntie Em!... There's no place like home!... There's no place like home."

### IN SEARCH OF THE FAR SIDE

by Gary Larson

If you haven't seen "The Far Side" cartoons, there is practically no way to describe their off beat humor. Larson must have permanent residence in the twilight zone, because his cartoons are "guaranteed to amuse, confuse, bemuse, and sometimes even lose its readers." If you're already a "Far Side" fan, you'll want this. If you've never seen the cartoon, get a copy and find out what everybody else is reading. 5 1/2 x 8 1/2 paperback about 128 pages  
Cat. no. 678 \$4.95

### THE AWESOME LIFE FORCE

by Joseph H. Cater

If you want something off-the-wall to read, grab this. It's the wildest thing I've run across in a long time.

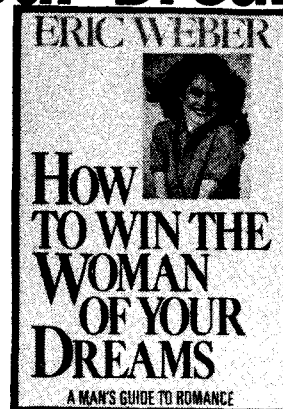
Cater is one of those people who claims that the government, the pentagon, NASA, the science community and others are suppressing knowledge and telling us lies, and that he alone has solved all of the mysteries.

Chapters include: undeniable discrepancies in conventional science, cause of tides, the hollow condition of the earth, closer look at the properties of light, popular misconceptions of atomic and particle physics, practical free energy devices, the Searl effect and related UFO phenomena, research of Von Reichenback, pyramid of life, resolving the mystery of teleportation, materializations from higher realms, origin and transference of disease, and much more.

I like his claims that there are holes at the north and south pole that go to the center of the earth. They've been seen and photographed by astronauts but suppressed by NASA because they can't be explained. And that's just for openers.

If you believe in this sort of thing, you'll love this book. If you're trained in the sciences, or can think clearly, you'll laugh yourself silly at some of his premises! But regardless of what side of the fence you're on, you WILL find this interesting reading. It's as far out as any book I've seen yet. 5 1/2 x 8 1/2 spiral bound paper covers 475+ pages  
Cat. no. 679 \$14.95

## Win the Woman of Your Dreams



### HOW TO WIN THE WOMAN OF YOUR DREAMS

by Eric Weber

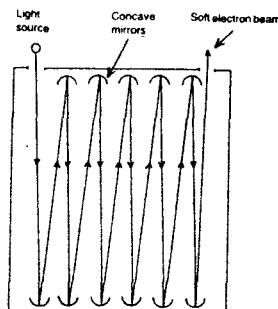
Face it! Some of us are so desperate, we'd be happy winning the woman of someone else's dreams! But that need not be so. Men, go get the woman you want. Here's how-to.

Chapters include: meet markets, icebreakers to warm her up, why a man doesn't have to be good-looking, those first five minutes, how to warm her up, how to win dates with hard-to-get women, how to talk to women, from talking to touching, how to keep a date from ending, and much more.

It's written in funny, but realistic style. It's NOT a macho love 'em and leave 'em yarn. It's down to earth. Maybe you know it all. If so, you'll still find it funny reading. Grab a copy. It's decent. 6x9 hardcover 175 pages  
Cat. no. 667 \$11.95

## THE AWESOME LIFE FORCE!

A DEVICE TO CONCENTRATE SOFT ELECTRONS



A soft electron beam is generated by positioning mirrors so as to create multiple reflections. As the number of reflections increases, a higher percentage of the original light is converted into soft electrons. The type of soft electrons produced depends on the frequency range of the original light source.

# AXA 5



## AXA 5

by Avenell & Romero

Beautiful Axa, the Eager, the Carefree is a current comic strip and is obviously British. In what other newspapers would you expect to find the well-endowed and most often topless (sometimes stark naked) heroine destroy the Toad Creatures? Beautifully drawn. Somewhat strange storyline. Quite interesting. 7x10 paperback about 80 pages Cat. no. 673 \$5.95

## AXA 3

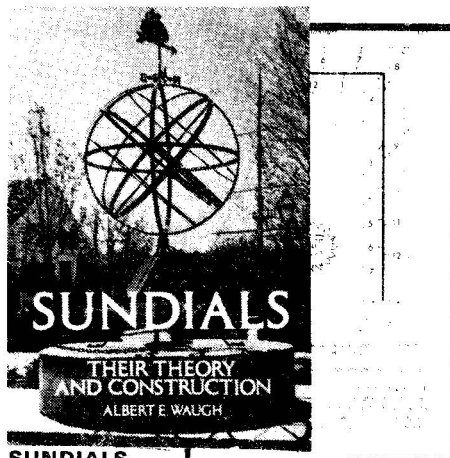
Prehistoric monsters in the Valley of Mist, and Axa bets her freedom on the Wheel of Fate. Cat. no. 6002 \$5.95

## AXA 4

Axa is up against Joy Eden, a crazed hag in an artificial paradise, then pirate dwarfs! Cat. no. 699 \$5.95

## AXA 6

Scientists preserving giant mutants means danger, then a settlement of gypsies in an old stadium. Cat. no. 6001 \$5.95



## SUNDIALS

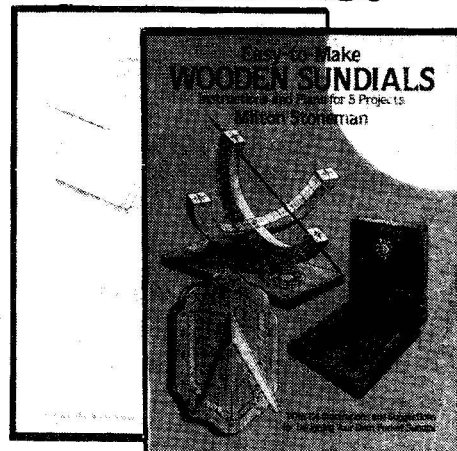
Their Theory & Construction  
by Albert E. Waugh

Yes, you can design and build the ultimate timepiece — one that is highly accurate, absolutely silent, needs no batteries, and has no moving parts. The only drawback is that it only works when the sun shines. If you live in London, you're out of luck.

Sundials can be quite complex. All the common types of dials are covered, but the reader can also learn about analemmatic dials, polar dials, equatorial dials, portable dials, memorial dials, armillary spheres, reflected ceiling dials, cross dials and more. You'll learn how to find the meridian, how to find time by moonlight, even how to estimate time from the length of one's own shadow!

The author has been a professor for over 40 years and is known as an expert on sundials. So get hot and make one. Make one to fit the top of your above ground swimming pool, and let neighbors guess what it is. Or make your wife a sundial Easter bonnet, or a sundial birthday cake for one of your children or grandchildren! You might even make one to tell time! Seriously, sounds like fun. Very reasonable price. 5 1/2 x 8 1/2 paperback 230 pages 106 illustrations Cat. no. 45 \$4.00

# SUNDIALS!



## Easy-to-make WOODEN SUNDIALS

by Milton Stoneman

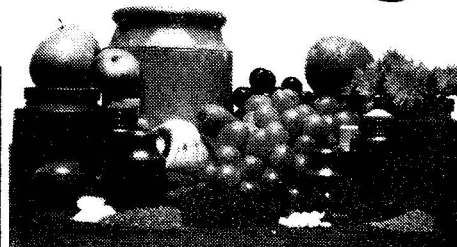
Here, in this 38 page booklet, are detailed plans and instructions for making five different working sundials: horizontal, vertical, folding equatorial, diptych, and bowstring. You also get a chapter on how to design your own pocket sundial, and a chapter on correcting the sundial to increase accuracy.

You can't beat this book for value. It's inexpensive but delivers really good information. Building a sundial should be a lot of fun. A bargain.

8 1/2 x 11 booklet 38 pages  
Cat. no. 47

\$2.95

# home brewing



## HOME WINE MAKING, BREWING & OTHER DRINKS

by Charles Foster

You haven't tried your hand at brewing wine or beer? Well, it's time to get going. Here's the book for you.

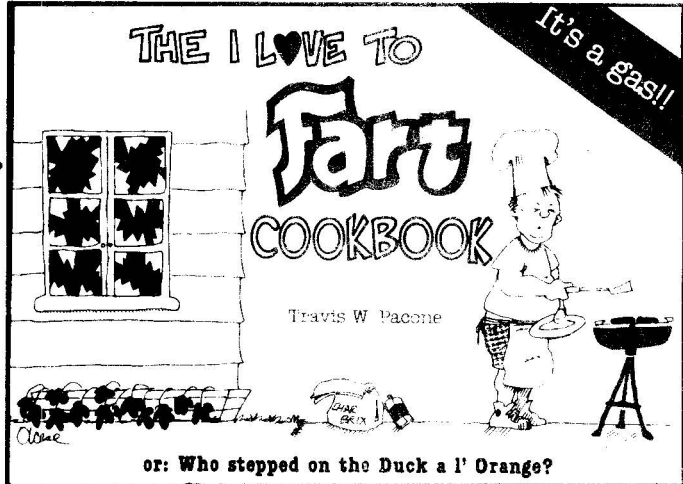
I've read a lot of wine and beer books. They usually get complex and are loaded with so many recipes you don't know where to begin. You'll find this book keeps it simple. You'll find some of the best recipes, and you'll learn how to pull them off with a minimum of hassle.

Learn about the equipment, the fermentation process, the recipes (from Apple-Elderberry to summer fruit wine), making a variety of beers including ale and lager, and the making of mead, cider and other special drinks.

First published in England, you'll find this easy-to-read and well illustrated. One of the nicest wine books I've seen yet. The color photos are so impressive, it makes me want to dig out all the equipment and make some more! 8x9 paperback 80 pages Cat. no. 685

\$8.95

# GAS CITY



## I LOVE TO FART COOKBOOK

by Travis W. Pacone

You had best not be downwind from the author! He presents his favorite recipes and rates them on their ability to produce gas! Enjoy such great dishes as Rumble Seat Salad, Turkey Talkback Stuffing, Neanderthal Bison Blaster, and many others.

While you're mixing up a batch of Swamp Gas Soup you can read interesting back-

ground information and enjoy the cartoons. But be careful! If you give this book to your wife and she uses it, you may end up sleeping alone in the garage!

Irreverent! Tasteless! Disgusting! In other words, a book you'll probably enjoy... or you know someone who will. Grab a copy 7 1/2 x 5 1/2 paperback about 128 pages Cat. no. 675 \$4.95

# HOW TO RUN A LATHE! ...a classic book!

## HOW TO RUN A LATHE

by South Bend Lathe Inc

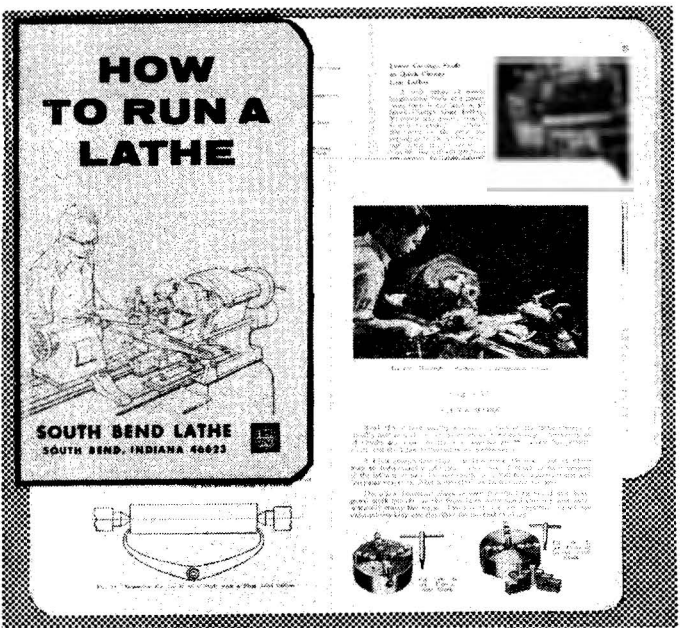
If there is a bargain anywhere in this catalog, this is it. And if there was ever a classic machine shop instruction book, it's this one. It has been in print since at least 1907, this edition carrying a 1966 copyright.

You'll learn all about the lathe, selecting a lathe, installing and leveling it, lacing leather belts, and oiling it. Next, you're shown how to use it. You get a complete education in selecting and grinding cutter bits, making precision measurements, turning between centers, checking tailstock offset, using chucks and collets, turning tapers and boring. You'll be shown how to drill and ream, and cut right and left threads of all types: acme, national coarse, double square, Whitworth, worm thread, and multiple threads. Use of the knurling tool, the steady rest, the face plate, mandrels, and milling cutters are covered. There are many tables covering everything from cutting speeds and thread conversion tables to Morse taper specs.

I have a greasy, bent up copy next to my lathe. It's exceptionally useful, and if you don't have a copy yet, then order one. It's loaded with excellent illustrations, and it's worth twice the price. A bargain! 5½x8½ 128 pages soft cover

Cat. No. 10

\$3.95



# WELDER'S BIBLE!

## MODERN WELDING

by Althouse, Turnquist & Bowditch

You name it, and you'll find it in this big hardcover technical school textbook. What do you need? —gas welding, cutting, DC arc, AC arc, oxy-arc, TIG, MIG, resistance welding, brazing, soldering, special metals and processes, weld testing, welder's qualifications?

It doesn't matter what you already know, there is something here for you. If you're a beginner, you start right in and learn what you need. Learn as much or as little as you like.

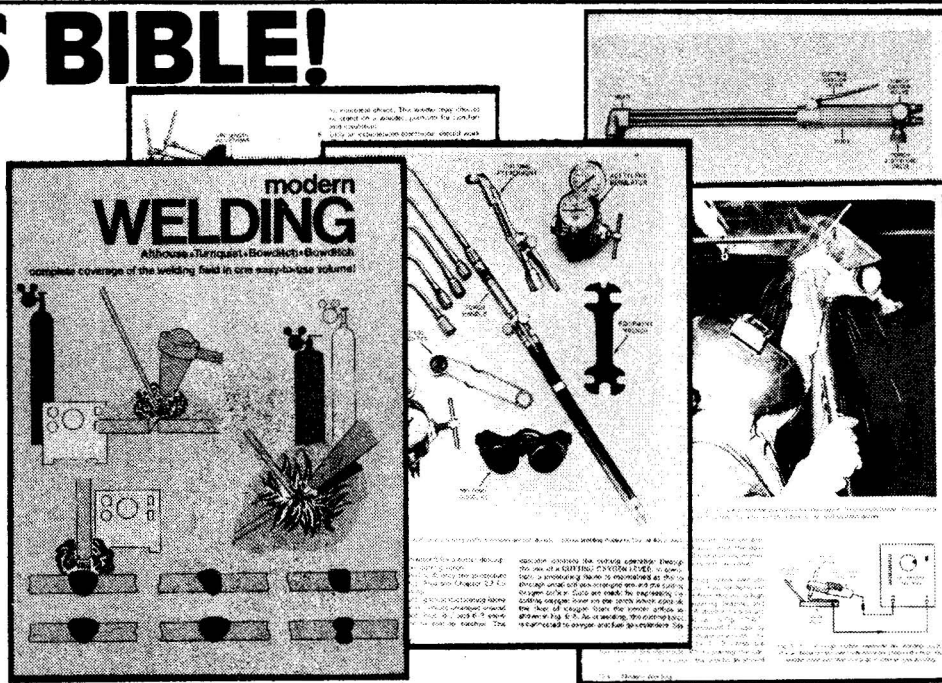
If you're already experienced, then you'll probably find theory, the welder wiring diagrams, the numerous tables and charts, and the more unusual techniques of use.

Obviously this covers much the same material as other books on welding, but delivers many details that you don't always find in other volumes. Discover electron beam welding, strengthening cast iron welds, welding plastics, and more.

A really good book. Expensive, but good. Every page is loaded with drawings and photos. 9x12 752 pages 1370 illustrations hardcover

Cat. no.17

\$24.95



# Learn the tricks of INDEXING...

## INDEXING

reprinted by Lindsay Publications

From out of a 1903 technical school textbook discussion on milling machine work, we have extracted a valuable section on indexing. Most of this booklet covers indirect compound indexing, the method that will give you the greatest flexibility and the most options.

You'll learn about such topics as construction of the indexing mechanism, calculating turns of the index crank, selecting the index circle, using the sector, using index tables, calculating the moves for compound indexing, and simplifying the moves. The math used is simple fractions.

The second section covers the use of the spiral head which at that time was an innovation marketed by Brown & Sharpe. You'll see the improvements in gearing, what effect rotating the index dial has, and you'll get an excellent explanation of the numerous indexing tables provided.

A final section covers fractional indexing using two indexing plates and a special spiral head. Three more pages of indexing tables are provided.

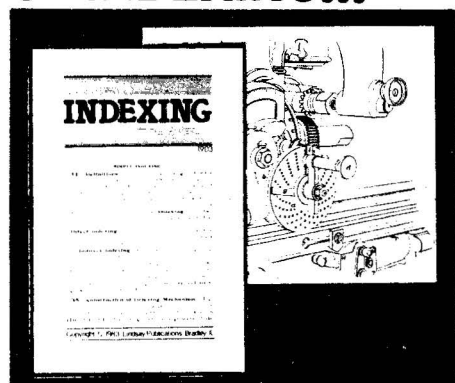
Some of the information should be quite useful to you. Some will not, but even so, what you learn should expand your knowledge to allow you to make more creative use of the dividing head you do have. It may provide you with ideas that will allow you to take a standard dividing head design and improve it or modify it to your own needs.

To what use you put this information is up to you. All I can do is provide the very best knowledge from the old days that I can possibly find. And this one is good quality. This reprint is so low in cost that you can't afford to pass it up. Order a copy today.

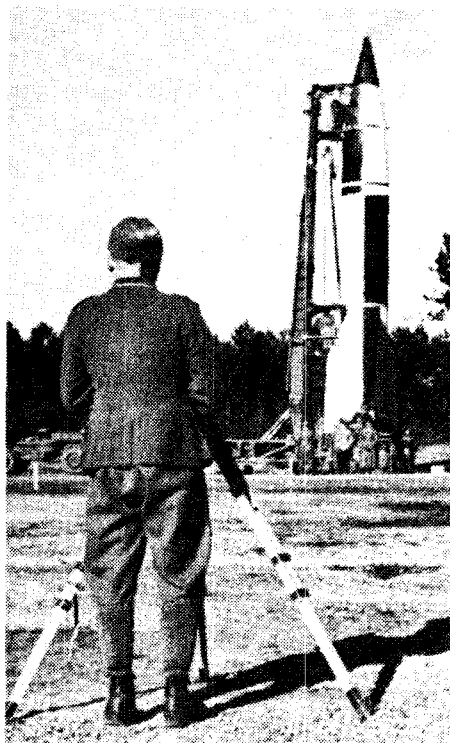
5½x8½ booklet 31 pages

Cat. no. 869

\$3.50



# The Rocket Team!



## THE ROCKET TEAM

by Ordway & Sharpe  
forward by Wernher von Braun

Imagine yourself on the team that built the first rockets, that put the first man on the moon! What would that have been like? Who were these people? Find out!

"From the V-2 to the Saturn moon rocket, this is the inside story of the von Braun team, a group whose experiments in pyrotechnics eventually changed the course of world history.

"The authors... overcome the tedium that often accompanies accounts of the development of military or aerospace hardware; they are, in fact, telling a story, and they tell it very well, letting the facts cascade in an understated, well-controlled manner. The book is entirely about people; it is the only one about the development of rockets, at least that I know of, in which a propulsion system is never described..." —Henry Cooper.

Nineteen chapters will take you from the countdown at Raketenflugplatz in Berlin, to the flowering of Peenemunde, the development of the V-2 rockets to space travel. And IT IS a good book. As you can imagine, I've always been fascinated with the German team that created modern rocketry, and I'm here to tell you that I'd buy this book for the pictures alone. There are probably no more than a couple of dozen photos, but I've never seen these before! Quite interesting. And I can't help but feel I'm a part of the team as I read this.

A good book. A big book! And very reasonably priced. Most of the books in this catalog go back decades and centuries to find the beginnings of modern technology. For rocketry, you need only go back to World War II — and this is a book to have. Recommended. 6x9 paperback 462 pages  
Cat. no. 1246

\$9.95

# Build a Tool Post Grinder! Castings and Instructions!

## TOOL POST GRINDER Castings & Instructions

by John R. Morris

Build a tool post grinder for your lathe! Here are the castings and the instructions you need to build a versatile grinder.

As it says in "How to Run a Lathe" by South Bend Lathe: "When equipped with a good electric grinding attachment the lathe can be used for sharpening reamers and milling cutters, grinding hardened bushings, and shafts and many other operations."

"Advanced Machine Work" shows how to perform a variety of work from truing centers and finishing tapers to internal and external grinding of bushings as well as sharpening many different cutters. In "Advanced", work is done on a universal grinding machine, but most of the methods can be easily adapted to the lathe.

John Morris says: "I'm sure when you see the finished product you'll feel as enthusiastic about the potential as I am..."

"I go into the motors and bring out the wiring to allow a reversing switch to be used.

"If you examine the spindle casting against the finished unit you will note that the underside boss that bares against the top of the compound slide on the lathe projects lower than on the finished unit. This is how the centerline height is adjusted to allow fitting the grinder to different lathes. The boss is cut down the required amount to place the shaft at the same center line height as the regular lathe center line height.

"I have mounted a modified grinder on my 6" Atlas/Craftsman metal lathe, and it will work, but is somewhat bulky. It fits my 10" Atlas/Craftsman nicely. It will fit 9" to 12" Atlas lathes, similar sized South Bend and Logan lathes, and I'm sure it could be fitted to a number of the import lathes.

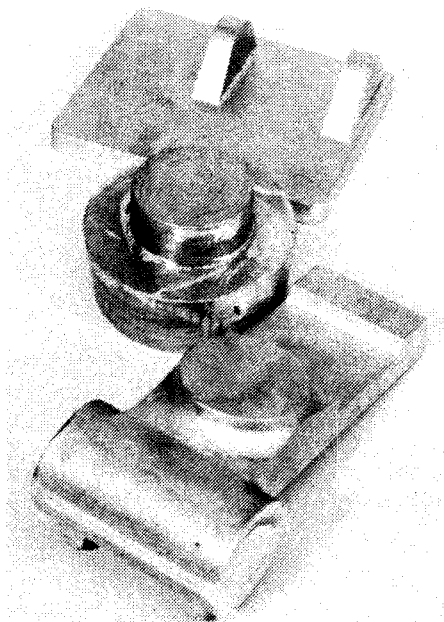
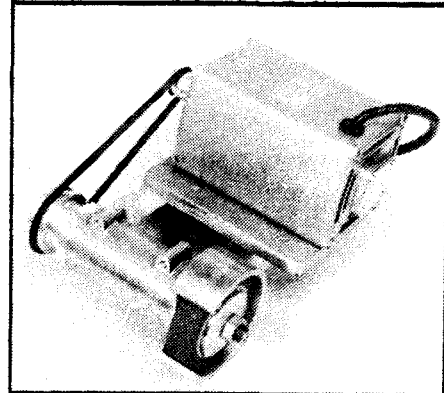
"If you will examine the spindle housing you will notice that it has two clamping bosses cast on the topside and on the same these have been faced and tapped for a clamping bolt. When the grinder is made to take interchangeable quills, the housing is bored out to accept a 1 5/8" quill which is made from a standard size thick-walled steel tubing. The casting is slit across the topside only lengthwise, and the quill can then be slid in and out of the spindle housing and clamped in place.

"The purpose of interchangeable quills is two-fold. First, to allow a longer shaft to which a very small wheel is mounted to be used for internal surface grinding, and second, to allow different wheels to be left mounted without the need to face the wheel true each time it is changed.

"The casting for the motor mounting plate has been made oversize. This will allow mounting whatever motor might be available. The same is true of the wheelguard casting.

"The shaft was made from a piece of precision drill rod available at most tool and diemakers suppliers. The main spindle casting was left solid rather than cored to allow flexibility in construction."

You get solid aluminum castings from a professional foundry. The castings I examined are clean, smooth, without pits, hole or defects — truly high quality. And they machine beautifully. Their total raw weight is about five pounds, and each of the castings is a real handful. The grinder shown has a 3" grinding wheel. —and of course, you get



detailed instructions on assembly and customization.

If you have a larger lathe but no tool post grinder, then order this. Not only will you enjoy building it, you'll greatly increase the versatility of your lathe. Considering the amount of work that you'd have to put in making the patterns and pouring the castings, the price is really quite low. Build a tool post grinder.  
Cat. no. 9800 postpaid \$59.95

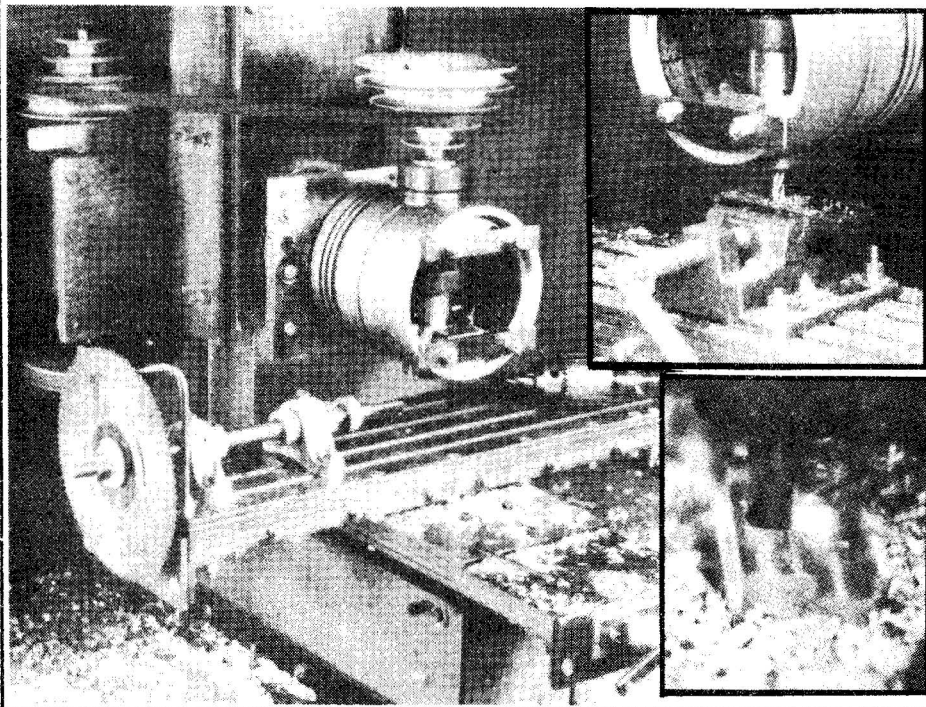
## SHIPPING NOTES

We do not stock these castings. You place your order with us, and we will have the castings shipped postpaid from Kansas via UPS. With this arrangement the castings essentially come from the foundry. Because this saves on unnecessary shipping, we can charge a lower price.

The castings are guaranteed against defects. The samples I've seen are top quality. But if in machining you should find some defect, the casting will be replaced.

The price includes shipping from Kansas to continental U.S. Add the usual shipping fees needed for the books on your order but not for the castings. Prices may change at any time, due to costs in materials and handling. Allow more time for delivery of castings than books.

# Build a powerful, precision milling machine!



## VERTICAL MILLING MACHINE

by Ramah Machines

The proven construction techniques used in the "Nephite" lathe project have been used to build a powerful, precise vertical milling machine.

Since the universal milling table was developed for this machine, the same specifications apply: 13" X travel, 6 1/4" Y travel on the 6" wide 4" high table. Of course, the table can be moved to allow milling at angles. Tests show that maximum thickness of material being milled is 6 to 7". Four spindle speeds are provided with an optional high-low range. Max depth of cut in mild steel with a 3/8" four flute end mill was .035". A 1/2" two flute mill in aluminum cut .220" deep. Max height of the machine is 37" and weighs in at about 260 pounds. It uses a 1/4 to 1/2 hp motor.

You'll need a lathe to machine the spindle, but other than that all you'll need is the usual drill press and handheld electric drill, plus the usual hand tools. No castings.

You should consider building this machine if you need a milling machine. If you have a mill, order a copy for your reference library. No doubt there are some design ideas here that you can put to use on other projects. This book includes the information presented in Ramah's book on the universal milling table.

A lot of valuable information for a very low price. What would it cost to buy a mill? How many hours would you waste perfecting your own design? It's worth it. Order a copy today. 8 1/2 x 11 booklet about 85 pages  
Cat. no. 1209

\$7.95

## BRICKS & GLASS

Great details from 1879!

### BRICKS & GLASS

from Appleton's Cyclopaedia of Applied Mechanics 1879

Think about it. You dig a hole in the ground and scoop up a pile of sticky clay. After you form it into small rectangular shapes, you fire it in a simple kiln with wood, coal or oil, and you have bricks! Before there were sawmills, early settlers to this area of Illinois built their homes from homemade brick and mortar, homes that survived a century or more before succumbing to modern subdivisions.

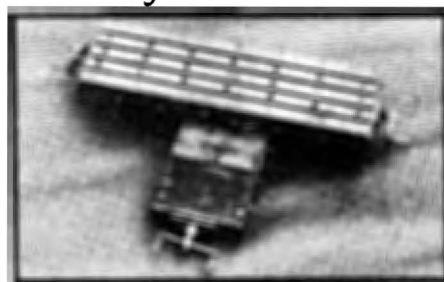
The first half of this reprint deals with brick making machinery from the pug mill to the molding machines with excellent illustrations and cutaway drawings of the machines. In 1900 with dozens of brickyards scattered throughout Illinois, it wasn't very hard to see these machines in action. But where can you find them today?

The second half of this reprint deals with the tools and techniques used in the manufacture of glassware. You'll see some of the simple tools used by glass blowers. And you'll see, what is now, a primitive bottle mold. Another illustration shows a polishing machine for smoothing glass sheets for the production of mirrors. Silvering of mirrors is covered, but the process described is the old one using mercury amalgam and is very poisonous to the careless worker. Still, you get all the details.

What is interesting about all this is that this technology is gone. It's from another age, and it's difficult to even find pictures of brick-making machinery, or formulas for silvering mirrors. This information is quite rare. Rare or not, it's fascinating to anyone interested in old technology... or to someone who's going to make his own bricks. Get a copy. 8 1/2 x 11 booklet 23 pages illustrated  
Cat. no. 877

\$4.50

## Or get plans for only the table!



### UNIVERSAL MILLING TABLE

by Ramah Machines

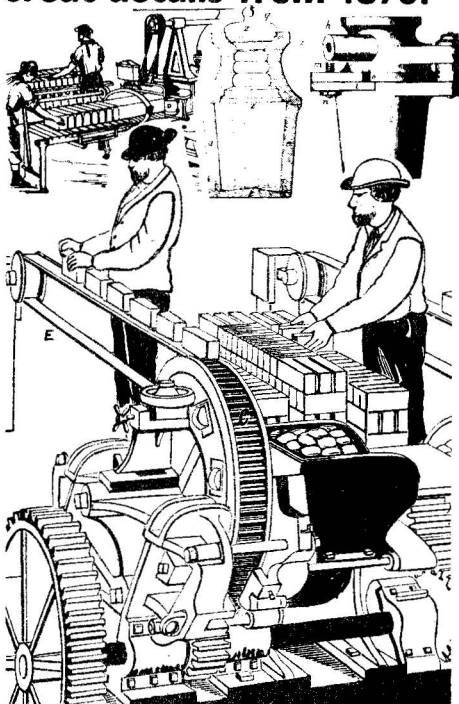
Ben Fleming built himself a steel x-y milling table he needed for his vertical milling machine rather than shell out \$75 for a light weight prefab unit. His friends were so impressed by the rugged construction and simplicity of design, they wanted plans. Here they are.

Overall height of the 70 pound table is 4", with an X travel of 13", and Y axis travel of 6 1/4". Table width is 6". A single turn of the lead screw moves the table .100".

The only power tools needed for construction are a drill press and a handheld electric drill. You'll be shown exactly what special components such as dowel pins and acme threaded rod are needed, and where they can be purchased by mail. No castings are needed.

Great project! and a useful addition to your machine shop. Order a copy. The price is very reasonable. 8 1/2 x 11 pages about 35 pages  
Cat. no. 1236

\$4.95



## TURNING METAL on a Simple Lathe

by John F. Malloy

Turning metal is easy on a modern (and expensive) metal lathe. Anyone can do it. But have you tried turning metal on a simple lathe such as a wood lathe?

Who would be crazy enough to try that? An expert blacksmith for one. And you'd be surprised at what can be done.

Malloy will show you how to make a cutting tool, temper it with a propane torch, sharpen it, make the first pass, the second pass, finish it up, cut high carbon steel, and make additional gravers.

Illustrated but less well described are constructions of a bell chuck and a face plate.

Malloy explains: "The only qualifications that I have is 19 years of general blacksmithing experiences and a terminal case of tinkering." He's made flintlock rifles, tools, and irons, and much more. He first saw free hand turning performed by an expert blacksmith. Since then, Malloy has used the technique to make steam engines, small airplane engines, and a muzzle loading barrel rifling machine. He has also managed to bore a hole .010" deep free hand that was off center by only .010" at the opposite end (this is material for a later booklet)!

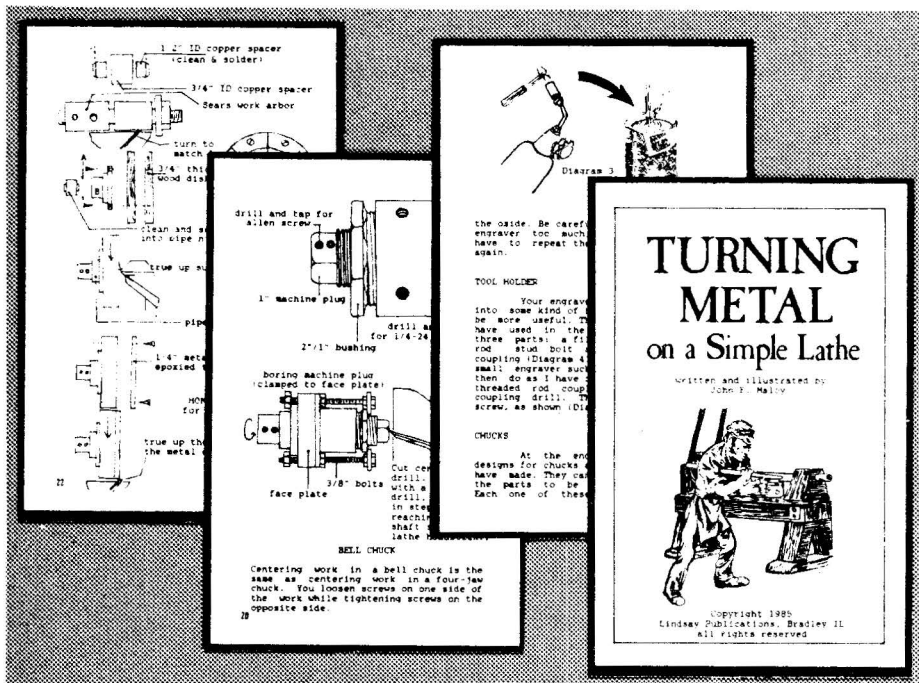
You'll find that Malloy is also a talented illustrator. You'll find a series of drawings (no text) showing how he turned the finned cylinder for a ¾" pipe tee engine.

Get a copy. This is information that you don't often find. I think you'll be surprised by the accuracy possible! Good reading. 5 ½ x 8 ½ 24 pages

Cat. no 884

\$4.00

# Turn metal on a simple lathe!



# Build a large metal lathe!

## No castings needed!

### NEPHITE LATHE

by Ben Fleming

You can build a precision lathe without castings having almost 10" swing over the three foot bed. And you can do it with little more than hand tools and a small drill press. A 3' bed provides about 22" between centers, but the bed can be extended several feet if you want. Four speeds are provided on the prototype. You get a compound rest, and a cross slide with about 4 ½" of travel.

Ben writes in his manual, "No outside machining is required. The lathe is bolted together for all parts but three, which are brazed or welded together. . . . The only 'precision' tool I used in the lathe construction was a good quality framing square. Using the construction methods as outlined in these plans, I was able to produce a lathe that, on its first test, showed only a .007 error, and with a few simple adjustments, can be brought close to a tolerance of .001."

Dave Gingery and Ben Fleming have been swapping ideas from the beginning. Dave comments, "His plan answers very well to the man who wants a larger lathe. Well thought out project, and within the ability of the average do-it-yourselfer, I think. . . ."

Cost of the prototype was \$185.

One of Fleming's design tricks is the use of large truck pistons in lieu of castings.

You get a 49 page manual, typewritten and quite detailed. You'll get recommendations, step-by-step instructions, hints and tips, as well as addresses of suppliers for tools and any special parts that you might need.



There is no provision for power feed on the lead screw, and therefore, this is not a screwcutting lathe. But by the time you build a copy, you might have figured out an ingenious way to add it. Even so, this is a powerful, precision lathe that can turn out quality work for you.

In addition to the manual, you get 14 11x17 inch pages of plans, assembly drawings and photos, and you also get 4 11x17 inch pages of templates that can be glued to the metal to eliminate layout. It looks like a fine lathe. You should consider building one. At the very least put a set of plans in your library.

Cat. no. 1212

\$12.00

# Blacksmith Shop Secrets from 1906



## Blacksmith Shop and IRON FORGING

reprinted by Lindsay Publications

Yes, blacksmithing is shaping red hot iron with an anvil and hammer into simple tools, hardware and horseshoes. But blacksmithing is the forging of iron with simple tools — the same forging process carried on today with enormous presses and dies.

There are a great many books that will show you the usual blacksmithing projects. But have you ever made a bolt head by welding on a ring? Have you made a rocker arm? How about a steam locomotive reverse shaft? Or a rudder frame?

Besides these rare topics, you get a complete discussion of blacksmith shop equipment: the forge, tuyeres, bellows, hoods, chimney, fuels, anvil, all types of hammers, chisels, anvil tools, tongs, swage blocks, surface plate, vises, calipers, hack saws and more.

The second part discusses the making of cast and wrought iron, all the basic operations of forging with teaching projects such as making an eye hanger, gate hook, etc. You'll get valuable information on all types of welds. You'll learn how to make a small chain and tongs.

Sure, there are many really good blacksmithing books around. But how many have you seen that were written in 1906? That present the technology and the craftsmanship of 1906? Today, blacksmithing is an arts and craft activity. In 1906 blacksmithing was a machine shop skill needed in day to day operations.

What sets this book apart from the others is its professional technical school approach to iron forging. If you're interested in blacksmithing, in the general working of metal, or in building a library of old technology, you'll find this reprint a must. If nothing else, I found it to be entertaining reading. Get a copy.

5½x8½ 96 page paperback  
Cat. no. 4074



## IRON FORGING

12 inches long, is upset at both ends. The ends are scarfed on opposite sides, as shown at *a* and *b*, Fig. 47 (*b*), and the iron is bent into the form of the desired ring. To do this,

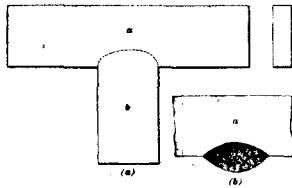


Fig. 46

the iron is heated and then laid across the horn of the anvil and projecting beyond it. The projecting end is hammered and bent around, as shown in Fig. 47 (*c*), until the scarfed

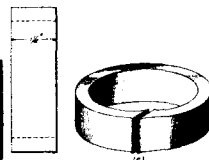


Fig. 47

welding, but about ½ inch apart. It and fluxed, and then raised to a he ring; it is brought to the anvil



Fig. 48

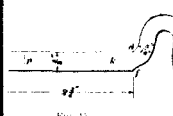


Fig. 49

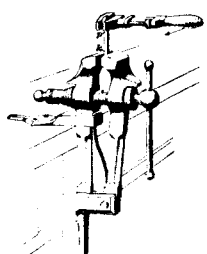


Fig. 50

of stock to make the hook, and this length is marked off from the end. It is then heated and drawn out until it calipers 2 inch square, when it will be about 5½ inches long. A length of 1½ inches is then marked off from the end and drawn to a round of ¾ inch diameter, keeping one side straight, as shown at *d*, Fig. 12.

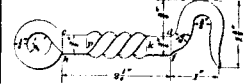


Fig. 12

The shoulder, or offset, *f* is formed over the edge of the anvil, as shown in Fig. 13. By striking the upper edge with the hammer, as shown, the top will remain straight at *d*.



Fig. 13

after which it can be finished with the swage to make it perfectly round. A length of ½ inch is then marked off on the ¾-inch end and the point drawn down round, as indicated by the dotted lines, Fig. 12.

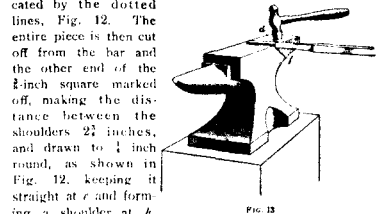
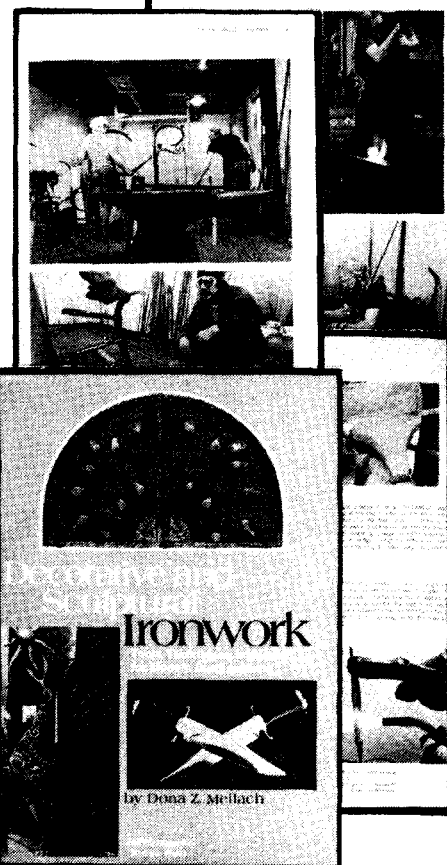


Fig. 14

The entire piece is then cut off from the bar and the other end of the 2-inch square marked off, making the distance between the shoulders 2½ inches, and drawn to ½ inch round, as shown in Fig. 12, keeping it straight at *e* and forming a shoulder at *h*.

The ½-inch round part is bent into a ring over the horn and the 2-inch round end is bent into the hook, as shown in Fig. 15. In bending the hook and the ring, the

# WORK IRON



## Decorative and Sculptural IRONWORK

by Dona Z. Meilach

Dynamite book! Get it! Whether or not you're into blacksmithing.

A good blacksmith can make tools, miscellaneous hardware, weld and the like, but only an artist can craft iron into the beautiful forms you'll see in this book. Like the title says, this is decorative ironwork, and brother, is it great!

Covered are the usual topics: the shop, forge, tools, fire, fuel, the heat, iron, steel, alloys, basic forging procedures, and so on. But then you get the good stuff: carving animals and other fantastic forms, gates, grilles, railings, locks, knockers, other hardware, bladesmithing for knives and scissors, etc. The chapter on Damascus steel is incredible. I was amazed at the beautiful effects possible welding thin strips of steel together. And you get info on mixed metals and sculpture.

This is downright practical how-to with page after page of great photographs. Quality books like this are hard to find. If you're at all interested in the different phases of metalworking, you should have this. The book is worth twice the price. Get a copy.

8½x11 312 pages  
Cat. no. 1023

\$10.95

# Projects from American Machinist

Projects from  
**AMERICAN MACHINIST**  
reprinted by Lindsay Publications

From the pages of 1904 and 1905 editions of American Machinist magazine come twenty unusual projects sure to fire the imagination of the home machinist.

Discover how to redesign the headstock of an old lathe and mold and cast a cone pulley for it. Build an unusual centering tool for round work, a special lathe face plate and angle plate for jig work, a profiling attachment for the lathe, a small screw punch, and handy devices for the foundry pattern shop. Learn three different techniques for sand molding sheave wheels. You'll find standards for squares and a lapping fixture.

Learn how one machinist made small bolts and taps from nails. Build attachments for verniers and dial indicators, a high-speed milling attachment for large milling machines, an improved thread chaser, a cheap surface gauge, gear cutting on the shaper, adding quick change feed gears to a lathe, lapping

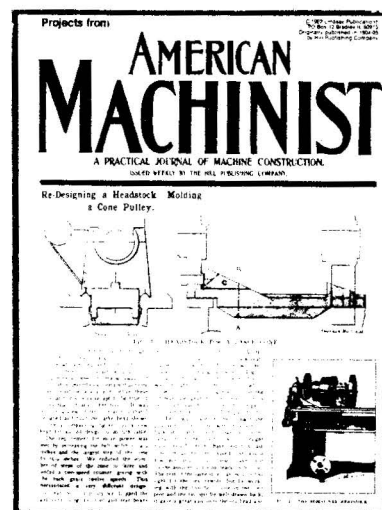
micrometer anvils, building a high performance automatic vise for the milling machine. Discussed are the difficulties of making really accurate taps.

You'll see an unusual milling attachment for the lathe. Build a boring tool holder for the milling machine, or a rig to wind small springs under initial tension on your lathe.

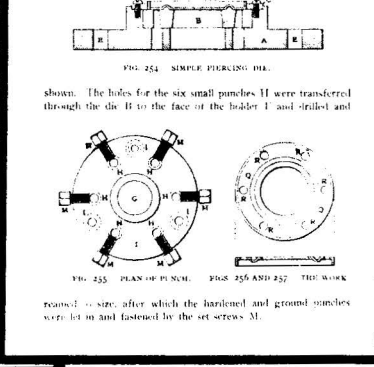
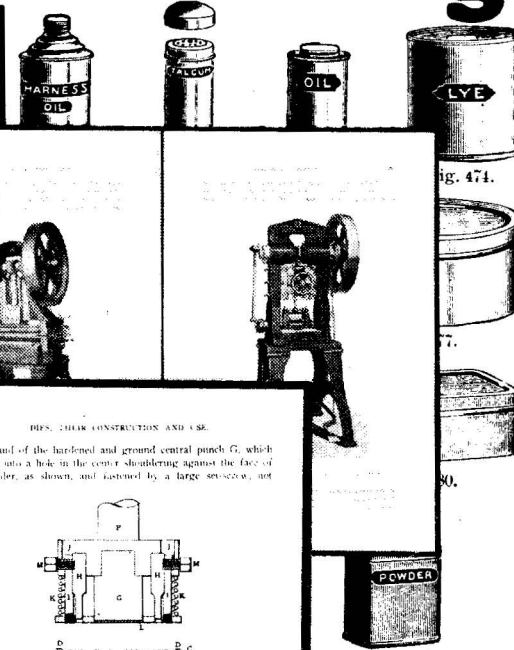
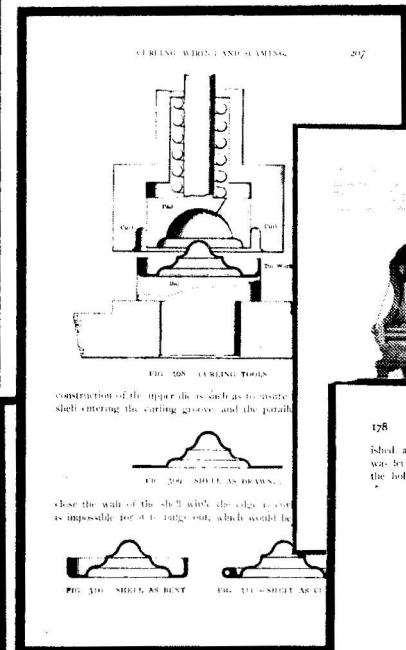
Each article has detailed drawings, although there are few dimensions. That should be no trouble, since you'll want to size the device to your own needs anyway. And I won't claim that each device is the best or most efficient solution to the problem. These are answers submitted to "American Machinist" by machinists themselves, so even if they do look crude, you know they work.

Great ideas at a low price. Fun reading for the machinery nut, and for experimenters in general. Order a copy today!  
8½x11 15 pages booklet  
Cat. No. 862

\$3.50



# Discover the Magic of Dies



**DIES — Their Construction and Use**  
by Joseph V. Woodworth  
reprinted by Lindsay Publications

Dies are magic! Mount them between the faces of a power press, slip in a piece of sheet metal, and then let the press cycle. Out comes simple flat shapes or complex forms like soft drink cans and auto fenders. And it is all done at incredible speed, time after time, each and every piece being identical.

Learn how you can put dies to work in small manufacturing shops. Thirteen chapters will teach you about blanking dies, piercing dies, simple dies for use in the machine shop, gang and follow dies, use of dies for production of sheet metal parts, bending and forming dies and fixtures, perforating dies, dies for curling, wiring and seaming, draw dies, coining processes, methods for feeding stock, hardening and tempering of dies, and more.

You get page after page of drawings and photos showing all kinds of dies for applications from turning a square of sheet metal into a tube in one hit and punching holes to the fabrication of those fancy old tins that held tea, tobacco, and crackers decades ago. You'll see a variety of presses — most of them in the smaller sizes.

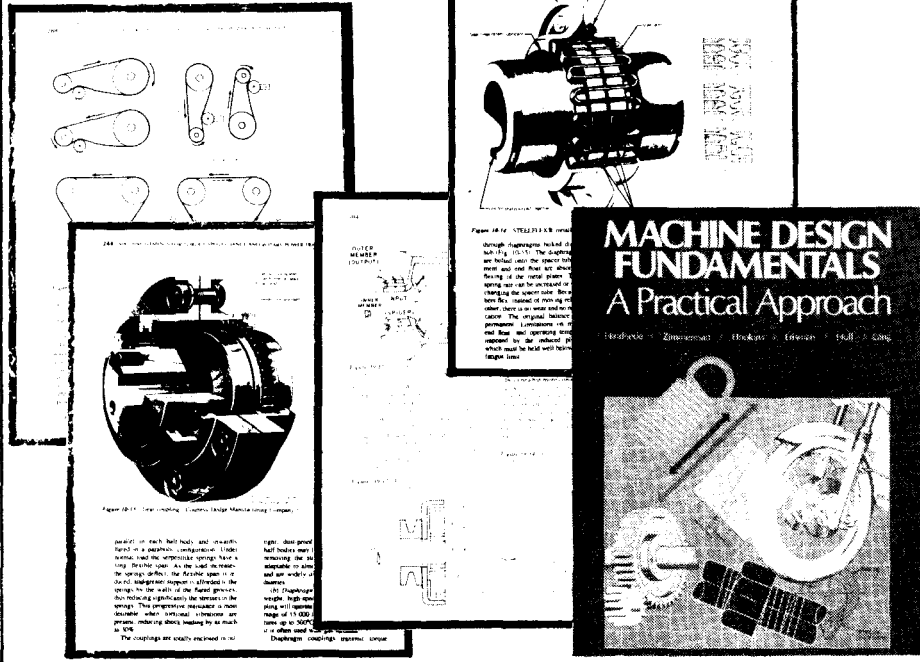
The beauty of this 1917 volume is that you'll be taught how to make simple dies in smaller sizes for producing all kinds of things from safety pins to punching fancy leather pieces for shoes. You'll even see a compressed air drop hammer used for making sheet metal caskets!

You can spend years as a tool-and-die apprentice learning how to build huge dies for punching auto fenders on million dollar punch presses. Or . . . You can learn right here how to make simpler, low-cost dies in your own shop that produce items you can use yourself or sell as a sideline.

Great information on a mass production tool useful to the small time operator. Very well illustrated. You'll like it. Get a copy.  
5½x8½ paperback 400 pages  
Cat. no. 4309

\$14.95

# Top rate machine design textbook!



## MACHINE DESIGN FUNDAMENTALS by Hindheide, Zimmerman & a cast of thousands

Right in the preface the authors tell you that they took an engineering text and simplified it for technology students. That is, they pulled the heavy theory and calculus out, leaving practical application with lots of illustrations and formulas for design.

This is the best mechanical design book I've found yet. Detailed but not overwhelming. You'll learn about fasteners, springs, couplings, belt drives, chain drives, gears, gears for nonparallel shafts, axles and shafts, sliding bearings, rolling-element bearings, clutches, gaskets and seals, mechanical brakes and much more.

This is not only educational reading, it's entertaining. How are bolts manufactured, how should they be used and tightened for maximum strength? The answers may surprise you. When should you consider using a hydraulic drive system? What effects do fillets, keyseats, grooves and the like have on shafting? What effect does spring preloading have on deflection?

For the guy who is going to design machines, this thick, jam-packed book is a must. Wall-to-wall illustrations, practical formulas, easy-to-read text will teach you and entertain you. If machine design is your thing, then I highly recommend this. Yes, it's relatively expensive, but it delivers. Best I've found yet. 8x10 hardcover junior college text 642 pages

Cat. no. 1218

\$36.00

# Elements of Mechanism!

## ELEMENTS OF MECHANISM

by Schwamb & Merrill  
reprinted by Lindsay Publications

When you open the cover of this old textbook you see that it was printed in 1907, and had an original copyright of 1905. Then you read the preface:

"The main subject-matter of this work was written during 1885 by Peter Schwamb and has been used since then, in the form of printed notes, at the Massachusetts Institute of Technology, as a basis for instruction in mechanism."

Had you attended that MIT class back then you would have learned about all the components that go into machines and how to design them. Chapters in this text include: levers, cams, linkwork, parallel motion, intermittent linkwork, wheels in trains, gearing, rolling cylinders, belts, cords and chains, etc.

You'll see lots of diagrams and formulas (no calculus) for designing cams and wipers, cylindrical cams, cranks and rockers, Whitworth quick returns (used on shapers), parallel motion with four bar linkage, friction catches, Geneva stops, escapements, gear trains for lathes, epicyclic bevel gear trains, gear tooth design, and much, much more.

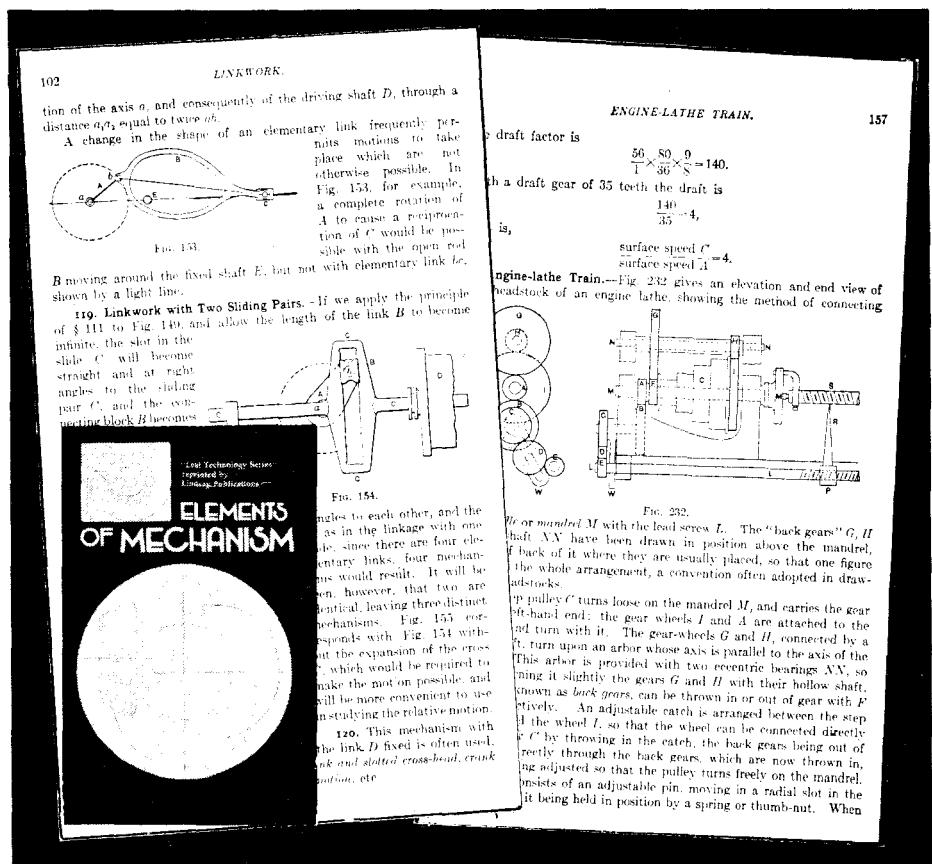
A copy of this and a calculator should be a great help in designing machines. Or you might just want a copy to read if you simply like mechanical devices. What's great about this reprint is that it was written when the emphasis was more on practical methods than on theory.

Just about any mechanic or designer could get something useful from this basic college text. Excellent book. 5½x8½ paperback 280 pages

Cat. no. 4155

\$9.95

58



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**BUILDING SCIENTIFIC APPARATUS**

Diagram illustrating the components and layout of a vacuum chamber system for building scientific apparatus.

**Key Components and Labels:**

- 0.2  $\mu$ F, 40kV MAIN DISCHARGE CAPACITOR**
- + HV** (High Voltage source)
- 1M $\Omega$**  (Resistor)
- 10K $\Omega$**  (Resistor)
- SPARK PLUG**
- TRIGGER**
- ROGOWSKI CATHODE**
- TRIGGERED SPARK GAP**
- ENDS AND CORNER ROUNDED OFF**
- 5 cm** (Dimension)
- 60 cm** (Dimension)
- MAIN DISCHARGE REGION**
- COPPER-CLAD CIRCUIT BOARD WITH ETCHED OR MACHINED PATTERN FOR PHOTO-IONIZATION**
- PREIONIZATION DISCHARGES OCCUR IN GAPS BETWEEN COPPER SEGMENTS**
- 3600 pF 40kV CAPACITORS FOR PREIONIZATION ARRAY**

*by Moore, Davis, Coplan*

You'll learn what's available now, state-of-the-art and where to get it. There are long lists of suppliers. You get equations and practical rules of thumb to aid design. Well illustrated. 1983 copyright.

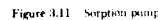
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### 3.4.3 Sorption Pumps, Cryopumps, and Ion Pumps

The simplest of this class of pumps is the *sorption pump*, illustrated in Figure 3.11. The sorbent material is activated charcoal or one of the synthetic zeolite materi-

Name (chemical composition)	Boiling Point at 1 Torr (°C)	Approximate Room Temperature Vapor Pressure (torr)
(Mercury)	120	$2 \times 10^{-5}$
(Di-n-butyl phthalate)	140	$2 \times 10^{-4}$
(Octadec-2-ethyl hexyl phthalate)	200	$4 \times 10^{-5}$
(Octadec-10-2-ethyl hexyl sebacate)	210	$3 \times 10^{-5}$
Convol 10 (saturated hydrocarbon)	150	$10^{-4}$
Convol 20 (saturated hydrocarbon)	190	$5 \times 10^{-5}$
Convol 10 (polyphenyl ether)	260	$3 \times 10^{-5}$
Neovac 55 (alkyldiphenyl ether)	240	$10^{-5}$
D.C. 702 (silicone)	190	$5 \times 10^{-5}$
D.C. 704 (silicone)	210	$6 \times 10^{-5}$
D.C. 705 (silicone)	250	$10^{-5}$

After several pumping cycles the pores of the sorbent material will become clogged with water and the ef-



by Franklin D. Jones  
reprinted by Lindsay Publication

With a properly designed jig it is possible to fabricate complex and precise machine parts far faster than laying out each by hand. Suppose you want to make a quantity of special mounting brackets, multiple pieces for a large machine, or an item manufactured for sale. A jig will greatly increase your output while increasing uniformity and quality.

Why pay through the nose? I picked up this 1920 volume and had it reprinted. The illustrations are not as pretty as the new books, but the information is every bit as valid and useful. And I'm only asking a fair price instead of an arm and a leg. What's better, they'll be available as long as my customers want them!

# Design Jigs & Fixtures

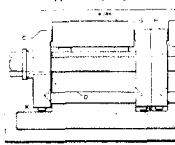
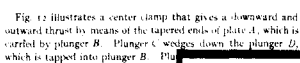
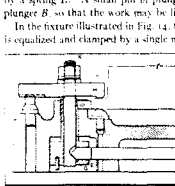
by a string  $E$ . A small tin in slings

Fig. 10. Method for Drawing down Two Work against the Stop-pin by a Single

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to place the block in the jig and feed the drill to the work. Brushes are unnecessary, as the chips clear themselves and the blocks are freed from chips as they slide over the perforated section of chute *E*.

For drilling the three holes in the sides a multiple-drill head is used and the piece is held in a jig which is a duplicate of the one shown, except that the templet which guides the drills is

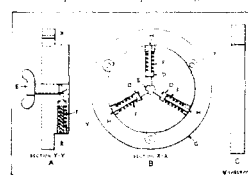


Fig. 4. Jig for Holding Ring while drilling

attached to the stationary jaw and is provided with three holes for guiding the three drills.

**Jig for Drilling Ring.** The jig shown in Fig. 4 at 1 and 2 is used for drilling the ring shown at 3. Referring to the illustrations: 1—See plungers 2—by springs 3—tilt the plungers 4—ring 5—then the plungers 6—on the surface of the ring machine 7—Foot-treadle 8—drilling foot 9—usual view of this jig can



from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch larger than the diameter  $D$  of the bushing. A groove  $E$ ,  $\frac{1}{4}$  to  $\frac{1}{2}$  inch wide is cut immediately under the head, so that the emery wheel can pass clear over the part being ground.

**Means for Preventing Loose Bushings from Turning.** In order to prevent the bushing from turning, in some shops a



Fig. 4. Fig. 5. Fig. 6.

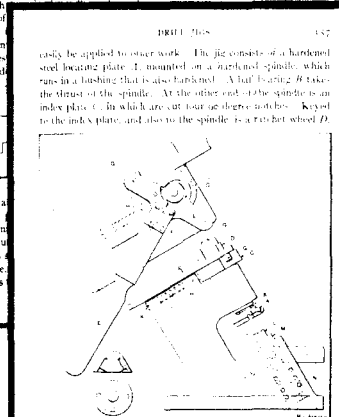


Fig. 5. Indexing Exports operated by Hand-lower and Foot-treadle

having four teeth. A hand-lever *E*, which has a bearing and turns around a hub on the index plate, carries a spring pawl *F* that engages with the ratchet wheel *D*. The lever also carries, at the outer end, two pins *G* that project downward, so that when it is pushed back and forth the pins strike on the body of the jig and prevent carrying the index plate beyond the looking pin *H*. This looking pin is a hardened steel sliding pin,

# Secrets of Ancient Astronomy



## ASTRONOMY OF THE ANCIENTS

edited by Brecher & Feirtag

"The eight articles and dozens of photographs in this book cover the astronomers of Karnak, Stonehenge, the Yucatan, and American Indians. Other topics include the Atlantis myth, the Sirius enigmas, and the first scientific instruments..." — rear cover.

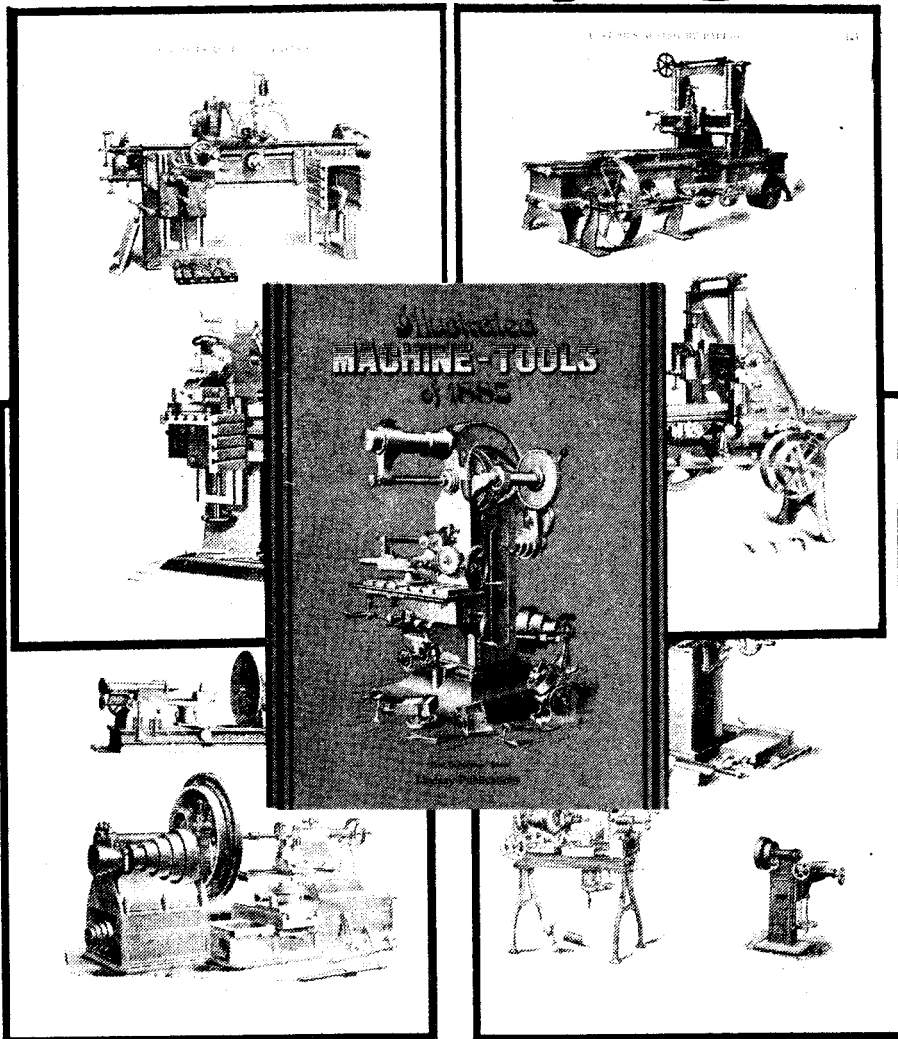
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You've seen all the wild books written by people who say we've been visited by spacemen thousands of years ago, who say they know where Atlantis is, that the Stonehenge was a flying saucer launch pad, and more. Well, here's one that's written by educated people who have no axe to grind. These are scientists interested only in finding the truth, and this book is a fascinating collection of papers they've written revealing their discoveries.

You can read the "crazy" stuff and have fun. When you want a realistic explanation of what Atlantis really was, or Stonehenge, read this. It's published by MIT Press so you know it's quality.

Interesting reading. Believable, and truth is always stranger than fiction. Get a copy. Reasonably priced. 6x9 paperback 206 pages Cat. no. 547 \$8.95

# Walk through a machine shop of a century ago...



## Illustrated MACHINE TOOLS OF 1885

reprinted by Lindsay Publications

Take this time machine back to the most modern well equipped machine shop of 1880. See the finest lathes, planers, milling machines, boring machines, gear and bolt cutters available. Marvel at the simple, low-cost machines that turned out work as precise as today's high-technology equipment.

"Machine Tools of 1885" is a reprint of a portion of a picture book produced for the 1880 census. You'll be fascinated as I was by the 242 detailed engravings of machine tools large and small, some designed for special work such as boring and facing locomotive cylinders and turning wheels. You'll rediscover some machines common then that are rarely seen today.

You'll see and read about double faceplate lathes with peripheral drive, vertical lathes, mandrel lathes and other forms. See the compound rests, back gearings, and chucks machinists used a century ago.

Discover huge belt-driven boring machines, bolt cutters, screw-machines, special

gear-cutters and more. You'll find a hefty section on planers and horizontal millers — each well illustrated and described by ample text.

Dave Gingery, author of the series of build-'em-yourself machine tool books that we offer, commented: "Boy! 'Illustrated Machine Tools of 1885' is a winner! I wish I'd had it when I started my series. My old Hill & Clark catalog has been a big help, but yours has a lot of technical data that is really valuable. It would make a great companion book for anyone who is building a shop with my manuals. There is one shot of a Brainard miller that looks like the one I've patterned mine after!"

A century ago, the technology of printing photographs was yet to be perfected. It is unusual to find any picture published in 1880. It is even more unusual to discover a picture book on machine tools like this. Order a copy now. The price is very reasonable. You'll really enjoy it.

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# Best of American Machinist magazine!

Great articles from the first six months of 1909!

## Best of AMERICAN MACHINIST 1909A reprinted by Lindsay Publications

Jump on this time machine and go back almost eighty years. Discover, learn, and see things from another age.

Visit early auto factories and watch them machine the engines on ordinary lathes and milling machines. See the jigs and fixtures they used to drill engine blocks, grind cylinders, turn piston rings, and more. See how burner slots were gang milled for the Stanley Steamer fuel burner, and how the 500 psi boiler was wound with piano wire to make it almost explosion-proof. Watch as valve chambers are bored in the Pierce-Arrow engine. And more!

Watch Louis van Boeckel make fantastic wrought iron roses in his blacksmith shop. Incredible craftsmanship! Learn how the gas-fire crucible furnace is built for heat-treating steel. Learn how acetylene and oxygen were produced right in the shop to fire up early oxy-acetylene torches. See the evolution and design of magnetic chucks, and how they're used.

Read practical letters from machinists showing a special jig for boring lathe headstocks, improvements on a steady rest, making a scratch gage, a novel babbit melting furnace, a mold for making babbit bearings, a hand knurling tool, a riveting machine and more.

Review the extensive test data on the White Steam Car. Discover seven pages of specifications, charts, diagrams, photos and results on one of the most successful steam cars ever.

Go back even further in history and see giant lathes with 7' swings and 18' beds, other lathes with stone beds, musket and cannon manufacturing from centuries ago.

Visit a grinding wheel factory. See how grit is prepared and graded, how the wheels are puddled, and how they're fired in an electric furnace. See them being trued up.

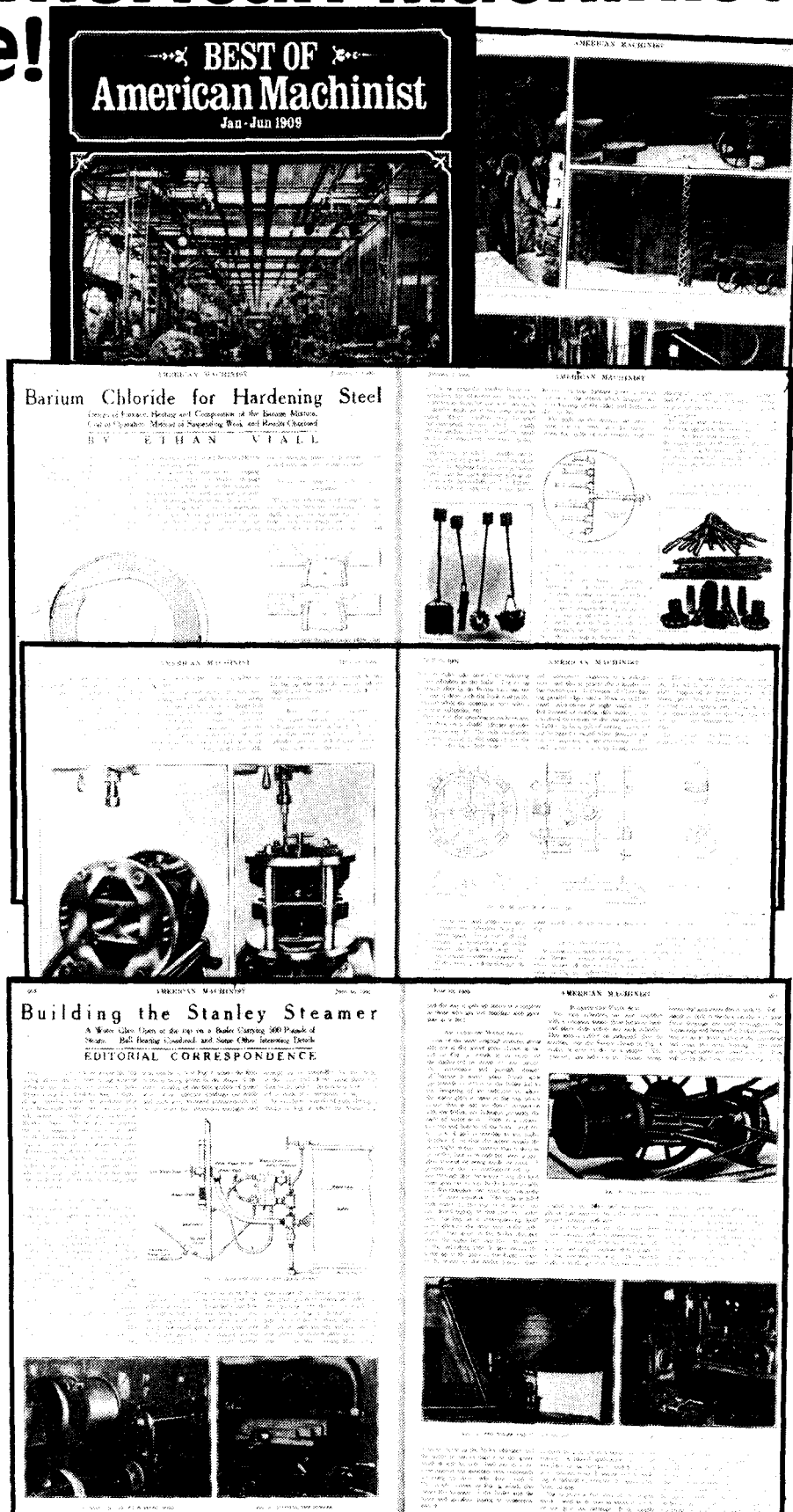
See the special jig used to mill the buckets in a steam turbine using an ordinary vertical milling machine. And discover such unusual items as an incredible 1877 machine having a voice box, tongue and other human-like features that could produce intelligible speech. See the vacuum sputtering machine that coated master wax cylinder recordings for Edison's talking machine with a thin gold layer.

If you build model engines, work iron with a forge and anvil, design and/or use machine tools, or just enjoy researching the past, you should find something here to interest you. You get useful how-to, great ideas from "obsolete" methods, and plain ol' fun reading.

Interesting stuff. Great reading. Order a copy. 8 1/2 x 11 paperback 128 pages heavily illustrated

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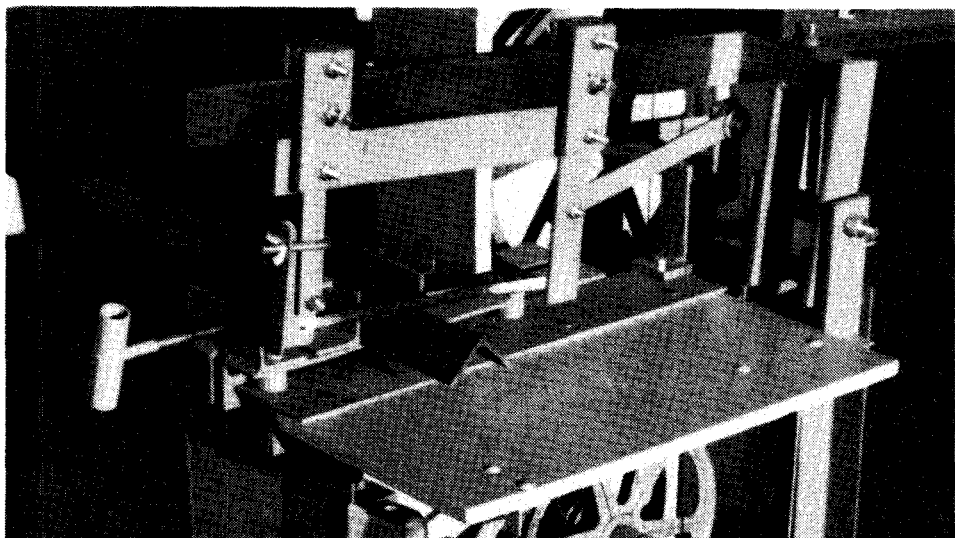
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# Build a Power Hacksaw

**Build a Deluxe  
POWER HACKSAW**  
by Sun-Thrift



Save your arm. Build this power hacksaw. It looks like the only really unusual tool you'll need to do it is an arc welder.

You get three typewritten pages of assembly instructions, and ten pages of detailed plans which just about any mechanic should be able to figure out without the assembly instructions. The vise jaw has a 5" maximum opening and uses common 12" hacksaw blades. There is no device to remove pressure on the backstroke to increase blade life. But then I read in an issue of Model Engineer a few years ago that such a complicated mechanism is hardly worth the trouble considering the small increase in life and the low cost and availability of blades.

The author tells me, "My plans . . . feature low-cost construction and utilize commonly-available materials. Metal castings and/or excessive amounts of machining are unnecessary. My plans are directed towards that larger group of do-it-yourselfers that wants timely, proven, positive results . . ." And the plans are professionally done. You'll like them. 8 1/2 x 11 photocopy 13 pages  
Cat. no. 1225 \$6.95

## LATHE DESIGN

by Oscar E. Perrigo

Did you ever think that someone would actually publish a book on lathe design? How many people do you really think design and build lathes? Quite a few these days, but how many back in 1916?

This is another of those old volumes that when I showed Dave Gingery for his opinion, I had to pledge that I'd reprint it before he would return it. Anyone who builds lathes, or any machine tool for that matter, should find this volume very valuable.

Chapters cover: history of the lathe up to the introduction of screw threads, development after screw threads, classification of lathes, design of bed and supports, headstock casting and spindle, spindle mechanism and back gears, tail piece, carriage, apron, turning rests, supporting rests, shaft straighteners, lathe attachments, rapid change gear mechanisms, lathe tools, testing a lathe, lathe work, engine lathes, heavy lathes, high-speed lathes, special lathes, regular turret lathes, special turret lathes, electrically driven lathes, and practical instructions on lathe operation.

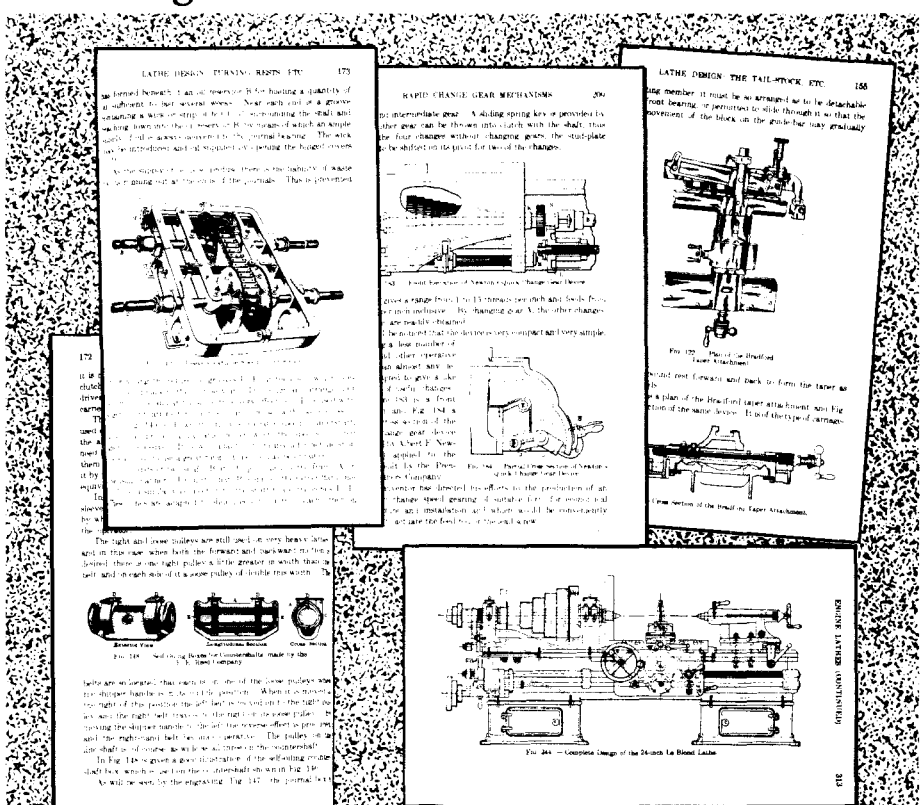
You'll see page after page of illustrations showing the various types of beds and cross bracing, tailstocks, spindle arrangements, gearing and drive techniques, taper attachments, and just about anything else you might imagine.

If you've already built a lathe, you probably have dreams for a bigger and better machine. This volume can probably greatly improve your design. Or if you are considering buying a lathe, learn about all the different types, the pros and cons of design types, and what each is good for. When you look at a lathe from the inside out, you get a different perspective from what you read in model magazines or advertising literature.

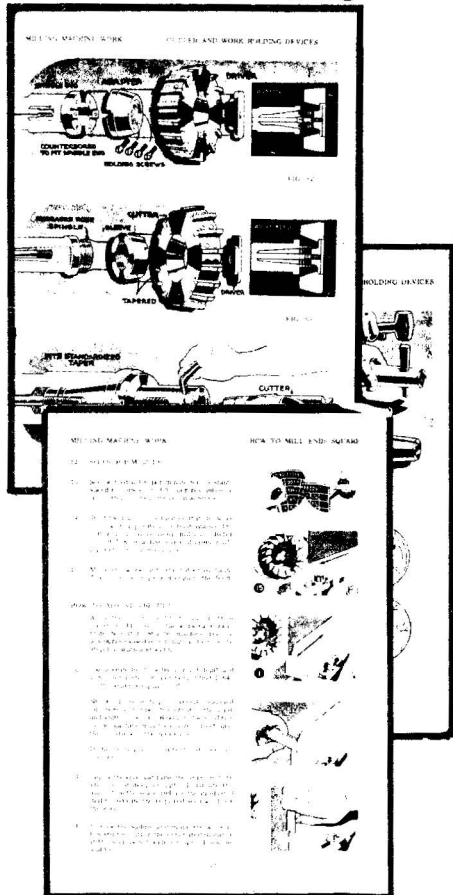
As with other books, I'm sure you'll discover many things you already know. But I'll bet you that there are many things covered here you never even suspected! Because a lathe is such an essential piece of shop equipment, this book gives me a good feeling having found it. This is one of my favorites along with Tool Making 1905, Steam Engine Design, and Sand Casting. I think you'll like it, too. Get a copy. 5 1/2 x 8 1/2 469 pages  
Cat. no. 4180 \$12.95

# LATHE DESIGN

Fascinating handbook on lathes from 1916!



# Milling Machine Work!



## MILLING MACHINE WORK

by Delmar Publishers

So you've bought a milling machine, or you're building Gingery's miller. Do you know how to use it to its utmost capability? Care to learn some new tricks? Then here's the book for you.

Learn how to make a horizontal miller sit up and talk. You'll learn about the milling machine and its accessories, common cutters, speeds and feeds, theory and use of cutting lubricants and compounds, how to oil and care for the milling machine, how to mill flat surfaces, mill square ends, how to slot, saw, mill keyways, set up and use the dividing head and more.

Each area is broken down into discussion about the subject followed by detailed how-to instructions. Excellent illustrations drive the lessons home.

Even though this book has a 1953 copyright, it's just what we need — a technical school textbook solid in the basics using the machines we are most likely to be using. It's loaded with practical how-to. The way that the book is laid out and illustrated is comfortable and easy to read. It gives me a good feeling, and I think you'll really like it, too. Order a copy.

8 1/2 x 11 paperback 304 pages

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# Drive It Till It Drops!



## DRIVE IT TILL IT DROPS

by Joe Triose

Learn how to have your car and have the cash too.

Learn the best kind of car for the 80's, four theories of maintenance, making an old car new again, who should fix your car, improving your car, three auto myths explained, and the future of the auto.

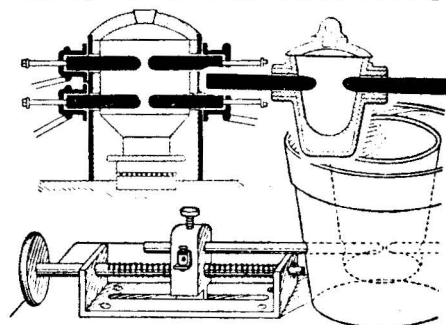
If you don't want to blow your wad on a new car, then you should have this book. This is not a book on mechanics, but a book on the philosophy and management of an automobile. It's humorously written, but it's dead serious, and no matter how many autos you've owned already or will own, there is something here for you to learn.

Interesting reading. One good idea put to work could save you a hundred times the cost of the book. I like it. Order a copy. 5 1/2 x 8 1/2 paperback 117 pages

Cat. no. 723

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# Arc Furnaces!



## ELECTRIC ARC FURNACES

Two short but excellent articles from turn-of-the-century mechanics magazines show how to build an arc furnace from clay flower pots and carbon arc rods. Although they claim it is useful for melting aluminum, brass, and the like, I know there are some people using similar small furnaces to melt steel!

You run every risk in the book with these furnaces: fire, electrocution, poisonous gases, etc., but they can perform.

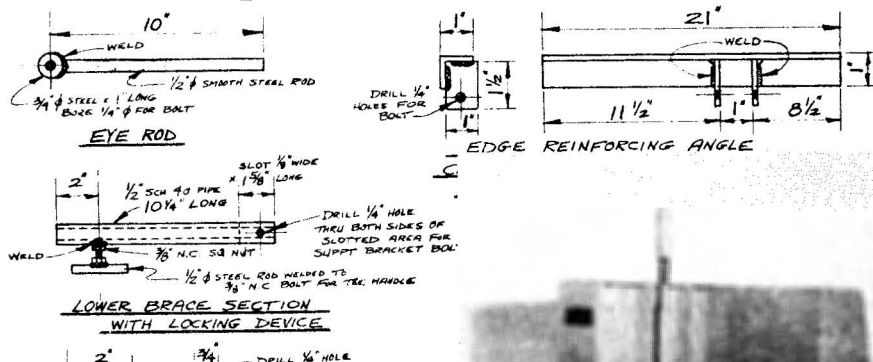
You also get many pages of reprints detailing the history and variety of electric furnaces showing their electrode arrangements and how they came to be. You also get a reprint on the Stassano furnace which is a large commercial furnace similar to the two amateur furnaces described.

Fascinating reading. You'll have to make adaptations and be very safety conscious if you intend to build, but it sounds promising. 5 1/2 x 8 1/2 15 pages illustrated

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# Build a precision bandsaw!



## Build a Deluxe 14 INCH BANDSAW

by Sun Thrift

"Here are the plans you need to build a durable, high quality, three speed metal and wood cutting 14" bandsaw at a fraction of the price of a commercial unit. . . . You won't need any special parts or castings, but you will need a welder. The result is a rugged, precise saw.

Specifications — Blade to guard: 13 3/4". Table tilt: 10° L to 45° R. Table: 21" wide x 14" deep. Blade speeds (fpm): 207, 1242, 2173. Blade: 93 1/2", up to 1/2" wide. Guides: combination bronze & ball bearing. Tracking: bandwheel toe adjustment. Tension: knob and spring. Maximum depth of cut: 3 3/4" (table tilted) to 5 1/4" (flat table). Driveshaft: 3/4" bronze or ball bearings.

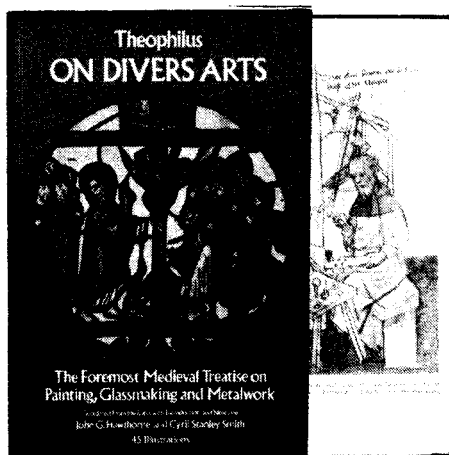
You get 18 pages 8 1/2 x 11 with photos, descriptive text, and professional quality blueprints. High quality. Fairly priced.

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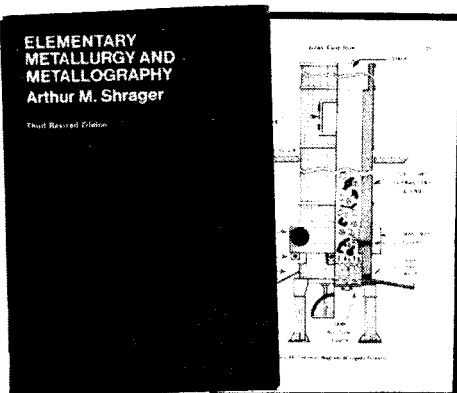
# Ancient Arts!



**ON DIVERS ART by Theophilus**  
Learn from "Theophilus" the crafts of the 1100's, such as how to mix your own paints from pigments, make glue from horns, redden doors, make gold and tin leaf, apply gold and silver to books, build a furnace for glass work, make sheets of glass, long-neck flasks, color and assemble stained glass windows.

The third part deals with metal working: building the forge, hammers, tongs, drawing wire, casting and refining silver, working gold and copper, separating gold from silver, casting bells, and a hundred other topics. An excellent new collection of lost medieval arts. Fascinating reading. 6 1/2 x 9 216 pages paperback No. 160 \$5.00

# Metallurgy!



## ELEMENTARY METALLURGY AND METALLOGRAPHY by A. M. Shrager

You may be a real hot-shop with a lathe or arc welder, but do you really know how steel is made? Or what hardening and tempering is all about? Or about corrosion and rust? You should have a copy of this book in your library. You'll learn about Bessemer steel, arc furnaces working of iron and steel, heat treatment, annealing, surface hardening, alloy steels, corrosion, copper, aluminum and magnesium alloys, zinc, control, testing, foundry practice and much, much more. You'll find this book is loaded with basic information that you can use to advantage in working metal. Loaded with illustrations. No math. Complete with appendix and glossary. You can't afford not to have a copy! 5 1/2 x 8 1/2 406 pages 3rd edition 1969 Cat. no. 54 \$5.95

## Mark's Standard HANDBOOK FOR MECHANICAL ENGINEERS

T. Baumeister, editor-in-chief

Yes, there are a lot of books in this catalog, but this is one of my favorites, one of the very best in the whole collection. It had better be! It's the most expensive!

Engineers are supposed to know everything. So when they face a new problem, their first instinct is to read up on the topic whether it be on boilers, conveyors, batteries, lubricants, coke, castings, bolts or anything else. It's this book they turn to. If it has to do with mechanical engineering, they'll find charts, diagrams, cutaway drawings, and clearly written text that gives them a quick-to-the-point education. Then they can make intelligent decisions.

You don't have to be an engineer to own a copy of this encyclopedia. And you don't have to be an engineer to understand and learn valuable lessons from its almost 1900 pages. If you're at all handy with a file, screwdriver or even a handsaw, then there is something here for you.

Try these questions: which is more dense gray iron or castiron? What are the three methods for making steel castings? How does wood grain affect its strength and how much? What's the difference between foundry coke and domestic coke? What's a load indicator washer? What's an eddy-current brake? How many HP will a silent chain drive handle? What's a mechanical steam separator? What is considered runaway speed on a water turbine? What's normal drawbar pull for a 27 ton locomotive on 1% grade? What are the dynamics of a supersonic shock wave? And on and on and on.

Some of the topics may seem really strange. Others will be things you've wondered about for years and never fully understood. I'll guarantee you that you'll spend a month of Sunday's thumbing through this volume, and even then you won't have scratched the surface. You'll agree it's a dynamite reference — a whole shelf of books in one volume.

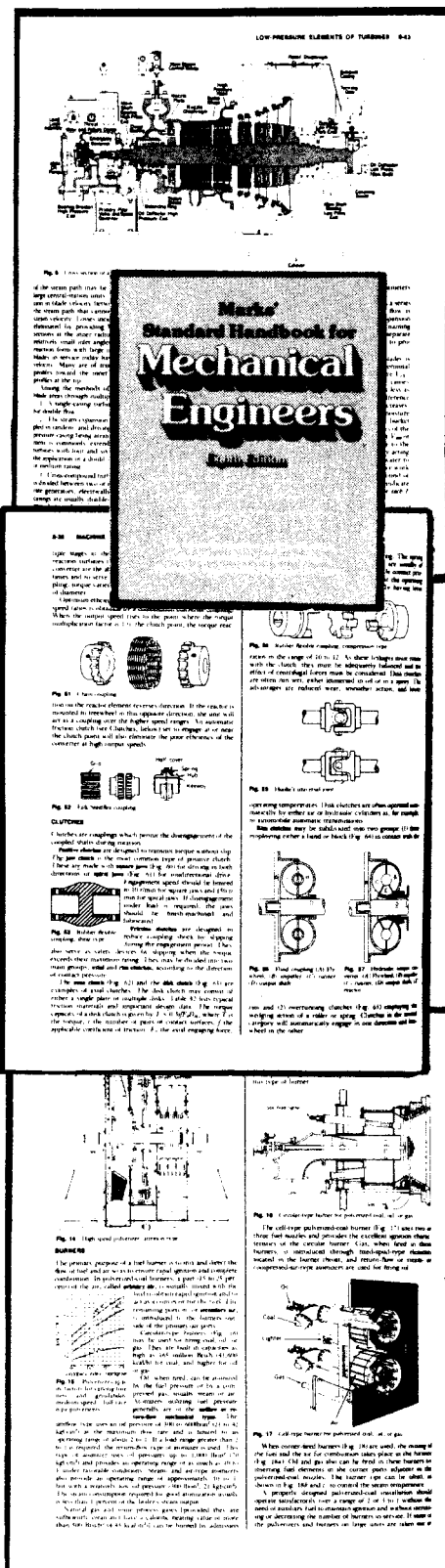
It IS expensive, but it IS worth every penny. Although some topics use a lot of math, most do not. It's easy reading. Loaded with details — no filler — straight to the point. Remember this is written for engineers who won't stand for nonsense.

A big book — 6x9 hardcover three inches thick, weighing almost five pounds! Just under 1900 pages — 2,059 illustrations. I can't give any book a higher recommendation, regardless of price. Cat. no. 145 \$85.50

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magnet wire table  
electrical windings  
rectifier circuits  
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electrical meters  
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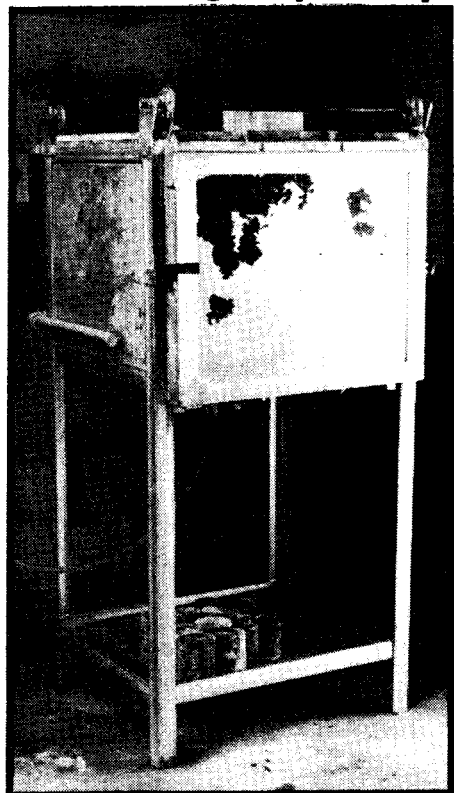
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conveyors  
earth movers  
heavy equipment  
much, much more

# Mechanical Engineer's Bible!



# Build a Gas Furnace!

Heat treating furnace! High quality!



## BUILDING THE GAS FIRED FURNACE

by Rod Jones

If you're attempting to build your own high quality drills, milling cutters, reamers, and the like, you need a quality heat treating kiln. Here's the data you need to build a rather large professional gas fired kiln.

With standard fire brick this beast weighs in at about 850 pounds, but light weight brick comes in at about 350. But you get 8 cu. ft. capacity in the inside. Perhaps that's more than most of us need, but you should be able to scale it down. Estimated cost is about \$350 for standard brick, and more for the lightweight version.

This is a proven kiln. You'll need to weld an angle iron frame, build the tuyeres and get a blower. But! The second section of this plan set will show you how to cast and machine a blower if you'd rather build than buy.

Jones does not lead you by the hand through step-by-step instructions. You're expected to know at least something. I would think that if you are advanced enough to really want one of these furnaces, then you're advanced enough to handle these plans. What you do get is great information on the details peculiar to this project. You'll get hints on laying the brick and mortaring, sizing the tuyeres, liquid fuels, pyrometer and blower, notes on firing, correct firing procedures and lots more.

You get 16 typewritten pages on the kiln itself and four on building the furnace blower. In addition you'll get four 22x34 blueprints. Good quality. Reasonably priced considering how rare plans like these are.

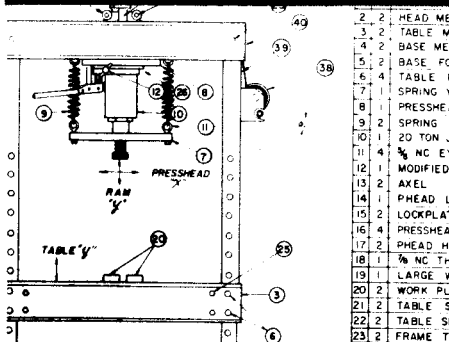
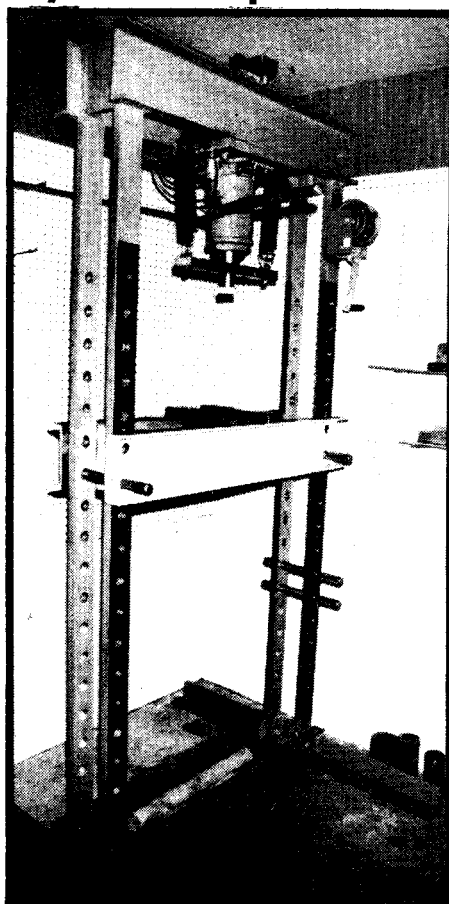
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\$12.50

66

# Build a 20 Ton Press

Build a pro quality hydraulic press!



## Twenty Ton Hydraulic Press

by Rod Jones

You can build a 20 ton press based on an automotive type jack with a stroke of about 9". This is another proven-and-built design, and was featured recently in Home Shop Machinist magazine.

You get three 22x34 blue prints along with detailed construction notes. Overall height is 6'10" with a 38"x42" base and an approximate weight of 500 pounds. This is no toy. It's built to provide the service a machine shop needs.

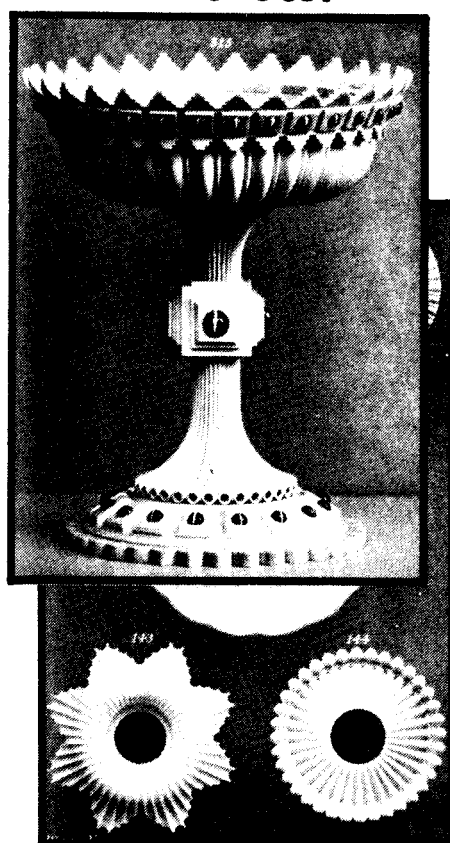
Good quality. A press is always a useful addition to a shop.

Cat. no. 1177

\$12.50

# Complex Turning!

Incredible lathe work secrets!



## Principles & Practice of Ornamental or COMPLEX TURNING

by J. J. Holtzapffel

And here is the fifth and last book in Holtzapffel's series on mechanical manipulations from 1881. On opening the book and seeing some of the more than 600 illustrations, I could only think "He did this with a lathe? How?" Incredible fancy turning!

Chapters deliver info. on general adjustment, methods of chucking, slidest in decorative turning with overhead motions, vertical and horizontal cutting frames, internal cutting frames, drilling mechanism, eccentric and elliptical cutting frames, epicycloidal and rose cutting frames. You'll learn about eccentric, oval, and spherical chucks and combinations of ornamenting chucks. A whole chapter is devoted to compound eccentric turning. Another on spiral turning. And one on the spherical rest.

You'll marvel at the intricate turning possible. Admittedly some of this work is gaudy, being from the Victorian era, but just to be able to do it would make any turner proud! And with all the old home restorations going on, I can't help but think that there would be a market for some of these ornate turnings. Maybe you could build a business around this skill.

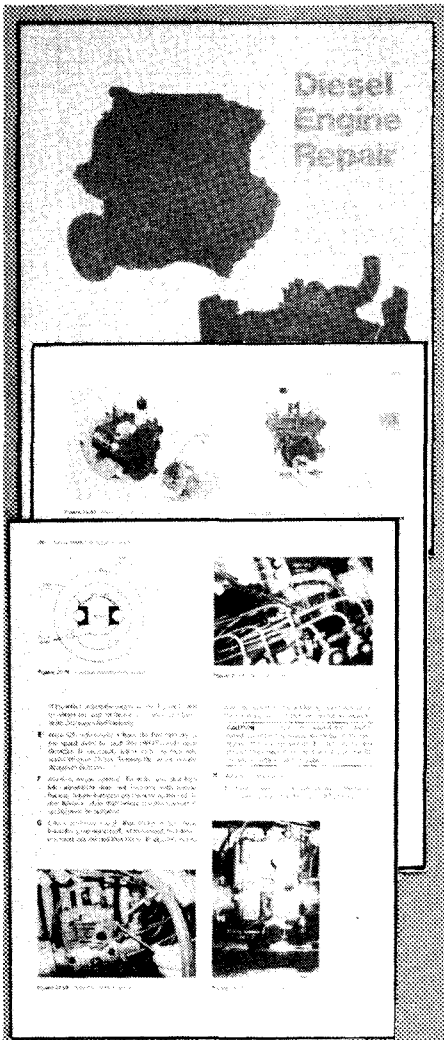
Rare info. No two ways about it. Put a copy of this on your reference library. And the price is quite reasonable considering the content. 6x9 hardcover 656 pages

Cat. no. 1215

\$19.95

# Diesel Repair

# Top Rate Hydraulics Books!



## DIESEL ENGINE REPAIR

Here's the best diesel book, we've ever offered. This superb repair manual is illustrated with photos provided by Cummins, Detroit Allison, International Harvester, Case, John Deere, and others.

You'll learn how to tear down the engine, repair and rebuild. It's all here: water pumps, main bearings, flywheels, injector pumps, lubrication systems, turbochargers, governors, injectors and many other topics. Yup, it has a hefty price tag. Yup, it will give you more than your money's worth. Top rate. Details, details. Copyright 1982.

9x12 hadcover 586 pages  
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The thing I dislike most about buying by mail is not being able to see what I'm getting until I've paid for it. So to serve my customers I offer only the best books, and guarantee each one. If every book is top rate, chances are very slim that you'll be disappointed no matter what you order. And even if that long shot comes through, and you're disappointed with a book, you can return it. In other words, I'm doing everything I can to remove the risks of buying by mail.

**You'll find these  
in technical  
schools all over  
the country!**

**Order a pair at a  
discount price!**

## INDUSTRIAL HYDRAULICS MANUAL by Sperry-Vickers

Within the almost 300 pages of this valuable book you'll find almost anything you can imagine. You'll start from zero and learn the details of industrial hydraulics to the point where you'll understand complex hydraulic systems comprised of pumps, spool valves, regulators, accumulators, throttles, check valves, fixed restrictions, solenoid operated spool valves, and much, much more. There are no shortcuts. Everything is here. Learn about jet pipe servos, pilot operated servo valves, deceleration valves, pressure compensated restrictors, and of course, all types of positive and non-positive pumps.

You'll be impressed by the quality illustrations that make learning so much easier. You'll understand in a minute why this book is found in so many colleges and technical schools.

8 1/2 x 11 290 pages heavily illustrated  
No. 119 \$15.95

## MOBILE HYDRAULICS MANUAL by Sperry-Vickers

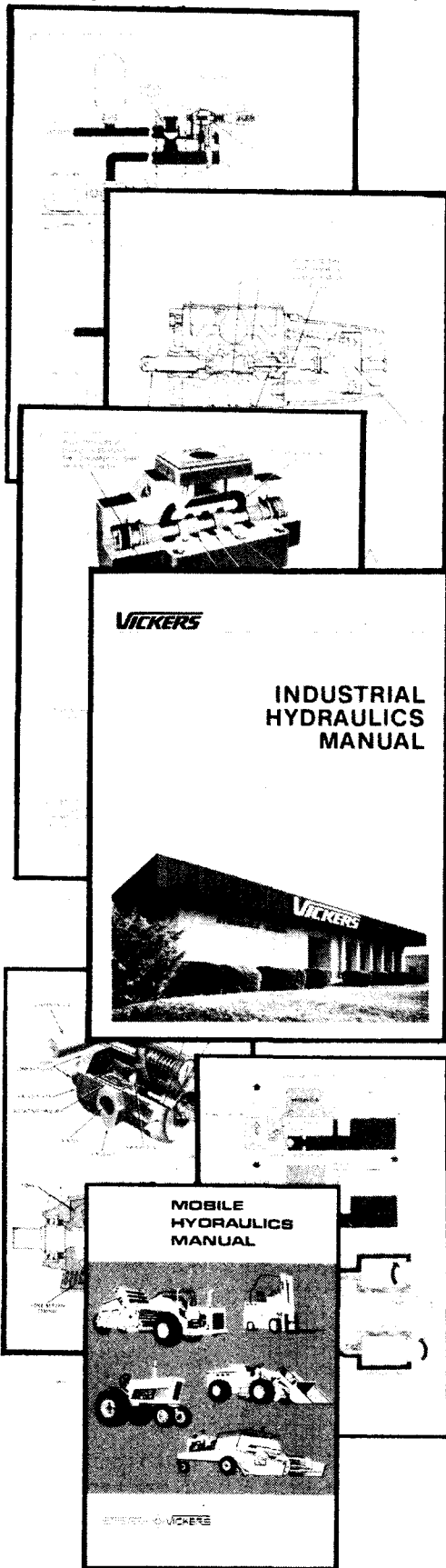
Although this and the industrial manual cover similar material, this excellent book is angled to mobile hydraulics — systems found on bulldozers, tractors, and all types of working vehicles. Here, again, the student begins at zero and builds toward a thorough understanding of complex systems.

Learn about reservoirs, coolers, filters, pumps, cylinders, motors. All types of valves are covered: sequence, relief, rc counterbalance, unloading, tilt control, pressure reducing check, flow-control, multiple direction, double-acting spools, and more. You'll find chapters on power steering and hydrostatic drives. There's data on oil types, seals, and just about anything you can imagine.

Find out why more than 160,000 copies have been printed since 1967. You don't have to be a pipefitter apprentice to learn hydraulics. Here's your opportunity. Order copies of these manuals today.

6x9 paperback 190 pages heavily illus.  
No. 120 \$8.95

**Both Vickers Manuals — Save \$2.95**  
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## INDUSTRIAL HYDRAULICS MANUAL

## MOBILE HYDRAULICS MANUAL

# Far, far out!



"I wouldn't do that, mister... Old Zeek's liable to fire that sucker up."

## BEYOND THE FAR SIDE

by Gary Larson

More bizarre cartoons! One of the most offbeat cartoonist's drawings today. Where does he come up with these strange gags? Larson's cartoons are "guaranteed to amuse, confuse, bemuse and sometimes even lose its readers." If you've never seen it, you should, and this is a great cross section of "Far Side" humor. Grab a copy. 5 1/2 x 8 1/2 paperback 128 pages

Cat. No. 689

\$4.95

# Smoke your meat!



## BUILD A SMOKEHOUSE

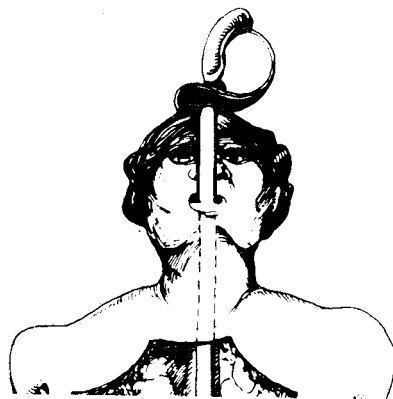
by Garden Way

You can turn out smoked hams, breasts of turkey, pheasants, eels, salmon, whitefish, trout and many other mouth-watering delights. Here you'll learn how to build and operate four different smokers from a simple temporary pit model to a permanent concrete block design. You can do hot or cold smoking or a combination of curing and smoking. Strong on construction how-to, but weak on recipes. Bargain. 5 1/2 x 8 1/2 32 pages illustrated.

Cat. no. 684

\$1.95

# How Do They Do That?



## HOW DO THEY DO THAT?

by Caroline Sutton

How do they roll up a roll of Scotch tape? How does a microwave oven cook food from the inside out? How do they splice genes? How do they know what the speed of light is? How does a Polaroid picture develop in broad daylight?

The answers to those questions and scores of others are here. This is fun reading. The answers are not extremely technical but are nevertheless accurate.

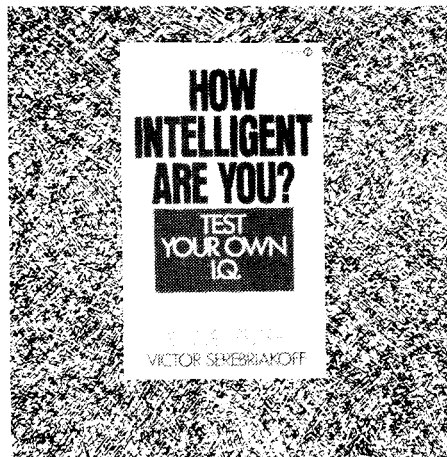
How do they get air into a two mile long tunnel? How do they charm snakes? How does Planters shell peanuts without breaking them? How does a gun silencer work?

Lots of good stuff. Lots of fun. 6x9 paperback 292 pages

Cat. No. 686

\$7.95

# What IQ?



## HOW INTELLIGENT ARE YOU?

by Victor Serbiakoff

You're reading my catalog, so that's one strike against you right from the start. —but I won't tell anyone.

"Test Your Own I.Q." with over 100 intelligence, personality, and creativity tests. The answers are provided, so you can cheat if you like. If you cheat, and I find out, you should consider running for political office.

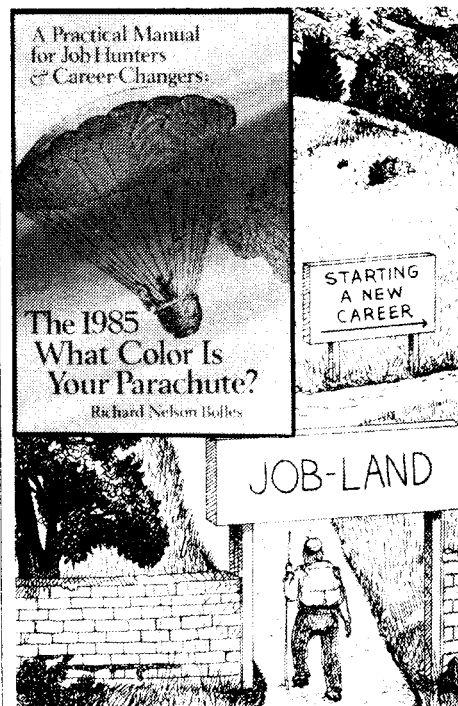
The author was General Secretary of Mensa for 16 years, so I suppose the tests he has compiled should be fairly accurate. No matter. You can have a lot of fun with this.

4x6 mass paperback 126 pages

Cat. no. 725

\$2.50

# You may lose your job!



## WHAT COLOR IS YOUR PARACHUTE?

by Richard Bolles

What are you going to do when you lose your job? Do you have a parachute? It's always good to have one ready in case you need it.

You're probably one of those people who thinks it couldn't happen to you. Think again! No labor union can guarantee job security. You can get laid off. The giant company can go bankrupt. It almost happened to Chrysler. It did happen to International Harvester. If you're in management, you could get the axe at any time: mergers, recessions, staff cut-backs. Even I can lose my job if I don't offer you top rate books and good service at reasonable prices. It can happen to anyone.

This classic will show you how to find another job. You'll learn about handling rejection, deciding what you want to do, where you want to do it, and finding that one person who has the power to hire you.

Forget about all the other job-seeking books out there, and get this. It's so detailed, so easy to read, so darned good, I wish I had published it. It has been around for 15 years, and updated 13 times. This is the latest edition.

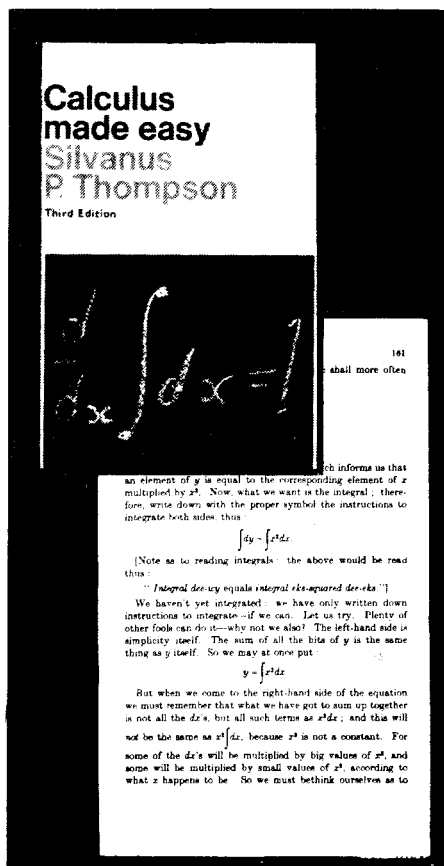
Even if you have a job, or especially if you have a job with a company in financial trouble, get a copy of this now. Read it. Learn it. Be ready if and when that pink slip comes. Better yet, escape while you can. It's better to have this information in your head and not need it, than to be unemployed, depressed, and wondering why you were caught off guard.

Get a copy today! 6x9 paperback 363 pages well illustrated

Cat. no. 691

\$8.95

# Calculus made easy!



## CALCULUS MADE EASY by Silvanus Thompson

The worst things about math are all the scary symbols. So you know when a calculus book starts out in the first sentence of first paragraph on the first page explaining what the most scary symbols mean, you know it's a good book.

Any scientist or engineer will tell you calc is a tool not much different from a welder or a lathe. But I took calc from a mathematician in college, and that jerk thought calc was an art form! Most of the time I didn't know what he was talking about (I'm not sure he did either). Who's looking for beauty in numbers? I need to solve problems.

This book, on the other hand, shows you how useful calculus is. It is as practical an approach as I've ever seen, and the author really takes the fear and confusion out of teaching this math.

Don't get me wrong. Just thumbing through this book is NOT going to teach you calc. You're going to have to work at it. But Thompson's approach is down to earth, and he covers it all: differentiation and integration. And this is 90% of the heavy math you see in engineering books.

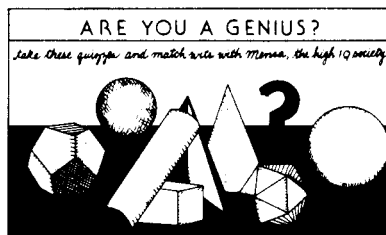
A lot of book for the money! If I had had this book at the same time I had that madman mathematician, I probably would have learned a lot more. It's too late for me, but not for you. Order a copy.

5 1/2 x 8 1/2 paperback 250 pages

Cat no. 52

\$6.95

# The MENSAGenius Quiz Book



Marvin Grosswirth, Dr. Abbie Salny,  
and the members of MENSA

# Are You a GENIUS?

## MENSA GENIUS QUIZ BOOK

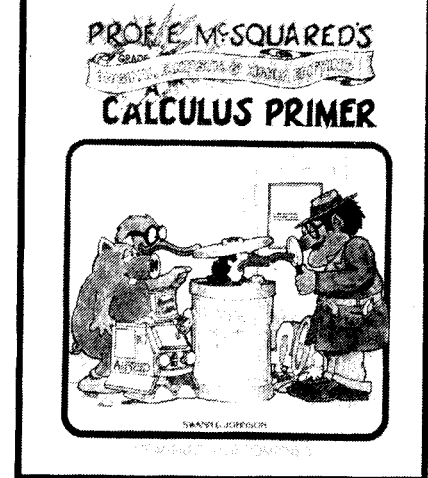
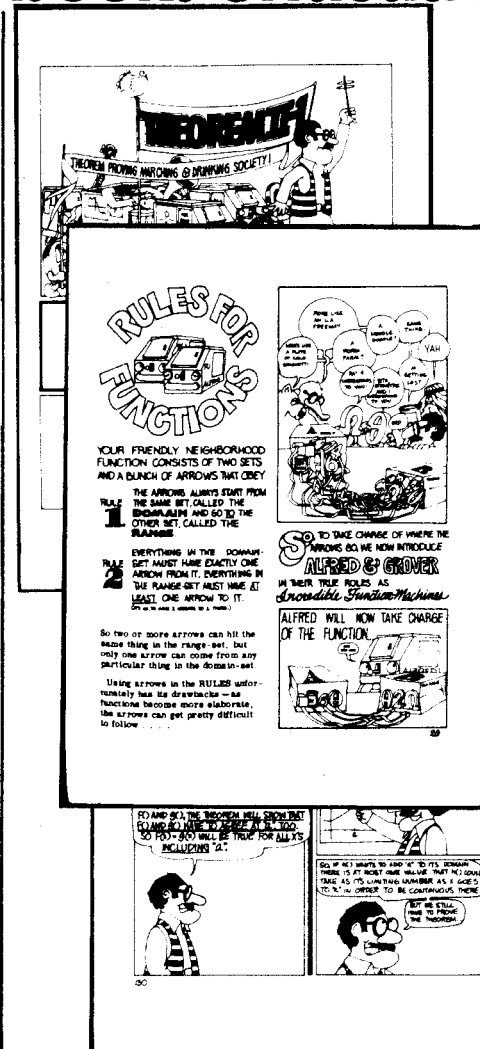
by Grosswirth, Salny & MENSA

Think you're a real hotshot, huh? This quiz book will chew you up and make you feel like a real idiot.

As you probably know, MENSA is a club (more-or-less) of geniuses. To be able to join you must pass an entrance exam to be sure that you are smarter than 98% of the rest of the population. Yup. You've got to be in the top 2% IQ bracket. I don't know what benefits there are to be part of MENSA other than to say you've qualified, but this book will give you your first crack at getting in. If you can pass the tests in this book, then you can write directly to MENSA for entrance details. Or you can order a copy of this just so you feel as stupid as the rest of us.

Interesting. 6x9 paperback 144 pages  
Cat. no. 722 \$5.95

# Learn calculus from a comic book! Unusual!



## Prof. E. McSquared's CALCULUS PRIMER

by Swann & Johnson

This is the craziest math book I've ever seen! I had calc in college but never in comic book form like this! You should order a copy of this and learn what it has to teach.

Calculus is the difference between engineers and non-engineers. If you would like to read engineering texts and understand what they're talking about you need a calc background. This won't make you a pro, but you'll understand what functions and discontinuities are, limits, and derivatives. You'll pick up the language and be able to understand scientific talk.

It will take work on your part, but I've never seen a more brilliant explanation of what's happening. This is a tool like a lathe or a table saw. Learn this skill and it will return dividends for all the years you have left to live. When you finish this calc book, write and I'll send a couple of other good ones, but this is the best.

8 1/2 x 11 paperback 214 page comic book  
No. 51 \$9.50

## MECHANIC'S NOTEBOOK SERIES

Talk about old technology! Here are some fascinating articles from "Appleton's Cyclopaedia of Applied Mechanics" published in 1879! Some of the topics are so old that they're merely of historical interest. But the articles I've reprinted here are practical as well as fun to read.

You get information that isn't easily found elsewhere. Some descriptions reveal early designs that are now extinct even though they had many excellent advantages. Other articles reveal truly "lost technology" — devices that are not only not built anymore, but very, very few people have even heard of them!

Like many of the other reprints in this catalog, these booklets are small, but are low cost. You get meaty articles. No filler. So even though they're small, you get your money's worth.

### MECHANIC'S NOTEBOOK 1

You'll learn about four topics: magnets, gauges, shapers and windmills.

First, learn about shaping machines for metal. Described and illustrated is the Manville Shaper built by Hendey Machine Company. Interested details of the clutches and cam box are revealed. You'll see the unusual Sellers Shaper machine with details of its drive including a cross sectional view. You get a detailed discussion of the Whitworth quick return motion. You'll also see a small hand powered shaper and equipment for holding the work.

Another article reveals the theory and operation of windmills which were an important source of remote power in 1879. A variety of windmills are illustrated and power curves and formulas are given describing their performance.

You rarely see anything on magnets. When you do, exotic alloys are always mentioned. Here, you learn about the theory and performance of magnets as well as the various methods of making them. They probably won't work as well as modern alloy magnets, but you'll learn something few other people seem to know.

And gauges! Yes, the article is about gauges and their use in checking fit. This was before the micrometer was common and inexpensive. But far and away the best thing in this section is a detailed description of Whitworth's micrometer built in 1856 that could measure to a millionth of an inch! A millionth! Never have I seen an article that described the gearing, the ratios, nor the adjustment detector in such detail! Get this reprint for this info if for no other reason!

5 1/2 x 8 1/2 booklet 24 pages

Cat no. 864

\$3.50

### MECHANIC'S NOTEBOOK 2

Volume 2 is devoted entirely to glass-making — the crucibles, the mixtures, and the furnaces.

This type of glassmaking is really the old-style craftsman approach. You get descriptions of window-pane glass, Bohemian, bottle, and crystal glass. You get the recipes for mixing ingredients. You see the tools and methods of making sheet glass as well as the special furnace for flattening it. You'll learn the process of making crown glass. You'll get the formulas for plate glass and see several different machines for casting it.

You can't make glass unless you can melt the ingredients. The final pages of this reprint reveal with excellent detailed illustrations the secrets of glassmaking furnaces that were fired with wood and coal. You get details of how crucibles were made and used. You even

get formulas for the firebrick, although the ingredients may be hard to get. I dare you to find such detailed information anywhere else!

Incredible! Glass can be recycled! Glass is easily obtained at no cost. Build yourself a furnace, fire it with wood, coal or even gas, and you can be in the glass business! That would really be something to try. Here are the secrets.

5 1/2 x 8 1/2 booklet 24 pages

Cat no. 865

\$3.50

### MECHANIC'S NOTEBOOK 3

Dynamos, batteries and a precision dividing machine are revealed here. Here are some dynamos that are so unusual that if you were to build a model to be run by an old gas or steam engine it would surely get a lot of attention when exhibited! Remember, in 1879 the incandescent light was brand new!

You get details on Niaudet's, Siemens's, Ladd's and Wilde's machines. You'll see what they looked like and how they operated. Also revealed are the machines of Wallace-Farmer, Weston, Gamme, the AC Gramme, the permanent magnet Gramme, the Bursh machine, and De Meriten's machine. See these incredible, unusual dynamos, that are now extinct. What fascinating historical models they'd make!

If you have an old-fashioned generator, you need some old-fashioned batteries too. In the next section learn about unusual batteries: voltaic pile, DeLue's dry galvanic pile, Hare's Deflagrator, Grove's element, Clamond & Gaiffe's sesquioxide of iron element, the improved Daniell cell, the Siemens-Halske element, Meidinger's element, and on, and on and on. There are 22 different batteries or variations described. That doesn't count the short section on storage batteries! You get cross-sections of battery construction and lots of details. Lots of experiments to be tried here!

Finally, you get a very detailed description of the machine that put the graduated scales on astrolabes, telescopes, transits, and precision instruments of all kinds. This is the ultimate indexing head — precision to the utmost. You'll be told how this cog engages that lever which turns that screw and so on. Every mechanical detail is presented. Surely, you should be able to build a copy from the description! Fascinating! Useful!

Get copy of this booklet too!

5 1/2 x 8 1/2 booklet 24 pages

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**PACKAGE: Mechanic's Notebooks 1, 2, & 3** — at a discount price. Save \$2.00.

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### Mechanics Notebook Vol. 4

#### BABBITT, MAKING A TRY-SQUARE

As you probably know babbitt was one of the most popular and successful bearing metals years ago. As good as it was, it was still a pain to work, because bearings had to be cast in place and then fitted.

In Notebook 4 you'll learn about making babbitt metal, melting babbitt, boxes and mandrels, rebabbiting a box, and babbitting journal brasses. As an example you'll see how to babbitt the pillow blocks for a one-lung center crank steam or gas engine.

Making precision testing tools is usually a mystery. Here you can learn several methods of making a perfect 90° try square. Learn how to test the squares and make a test block. Nicely illustrated.

5 1/2 x 8 1/2 15 pages

Cat. no. 871

\$2.00

# MECHANIC'S NOTEBOOKS



## great info at low prices!

### Mechanics Notebook Vol. 5 FILING

Any old expert mechanic will tell you that a cold chisel and a file in the hands of someone who knows what he's doing can shape metal as precisely as any machine tool. If you know what you're doing, you can file metal down to fine tolerances.

Covered are: purpose of filing, difficulties, advantages of convex faces, handles, holding the file, using the file, filing broad surfaces, diagonal filing, pressure on the file, filing curves, filing into corners, filing slots with curved ends, draw-filing, finishing filed work, position of body, effect of oil, and selection and care of files and filing jigs.

Excellent information with excellent illustrations. 5 1/2 x 8 1/2 14 pages

Cat. no. 872

\$2.00

### Mechanics Notebook Vol. 6

#### PRECISION DIVIDING, MAKING STRAIGHTEDGE, GALVANIZING

There's a trick to coating steel with zinc — the process of galvanizing. It's not that hard, although the chemicals might be somewhat hazardous. Still, there are several pages of good info.

Dividing a circle into equal parts can be tricky, here's a mechanical jig that can do it with extreme precision. How it is built and used is covered. This might be the nuts for laying out indexing plates for the dividing head.

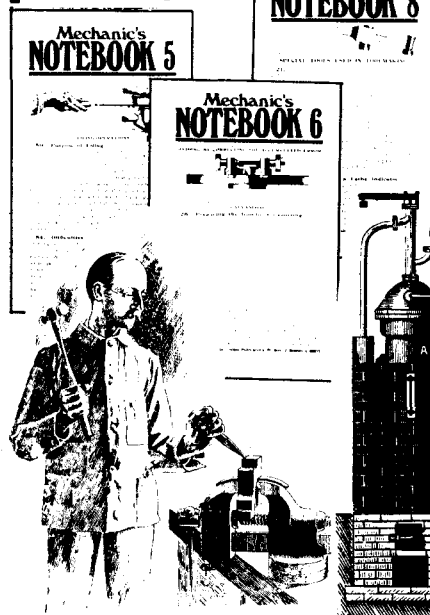
You can make a perfectly true straight edge with or without a surface plate. You'll learn about forms of straightedges, how to harden them, and how to finish and test your straightedge.

5 1/2 x 8 1/2 14 pages

Cat. no. 873

\$2.00

# Learn lost skills from the turn of the century! Great reprints at giveaway prices!



It's the same principle as before. Pick and choose the information you need and pay for only that information. Why spend \$15 for a book that has only 10 pages of interest to you? With these booklets, you in effect buy only those ten pages.

Each booklet is meat — cover to cover. No filler. No fluff. The booklets are small, but you're not buying paper and ink. You're buying information, and I guarantee you'll get \$2 worth of information out of each booklet, or you can send it back for credit or refund.

It would not be wise to duplicate the procedures here. You could get yourself killed. But it is fascinating to see the equipment that was used in 1879, and read about the procedures.

Learn about nitroglycerin and its preparation into dynamite, lithofractor, and dualin. Also covered is gun-cotton, potassium picrate, ammonium picrate, and differences between the chlorate and nitrate families of explosives. Most of the article is devoted to the production of the various types of gunpowder.

Fascinating reading. (Why else would I risk reprinting it?) 5½x8½ booklet 15 pages  
Cat. no. 879 \$2.00

## Mechanic's Notebook 11 PHONOGRAPH & ICE-MAKING MACHINERY

The first short 1879 article shows Edison's original phonograph and gives details on its construction and operation. This article appeared a year after Edison received his patent on the machine! It seems to me that building a working replica of the machine would be an exciting experiment and shouldn't be too hard to do.

Most of the notebook eleven is dedicated to ice-making machinery, which in 1879 was a newly developing technology. Described is Kirk's cooling machine, ether refrigerators, air machines, Siebe and West machine, Johnston and Whitelaw's machine, and others including Vander Wyde's machine which used naphtha, gasoline, rhigolene, or cymogene!?? Learn about Pictet system using anhydrous sulphurous oxide, and a number of machines based on ammonia.

It would probably be complicated, but since old refrigeration systems are based on compressors powered by steam engines, I think a working model of such a refrigerator would be incredibly interesting. This reprint might be the place to start researching the early obsolete ice-making technologies.

Oh! Also included are some formulas for chemicals that when mixed produce intense cold. That might be fun to experiment with too. 5½x8½ booklet 14 pages  
Cat. no. 880 \$2.00

## Mechanic's Notebook 12 AMERICAN MACHINIST FOUNDRY NOTES - 1884

First, and this is great, is a detailed article on a small cupola for melting castiron. The author was fully acquainted with running small cupolas 12" to 18" in diameter. Usually 300-400 pounds of iron could be melted in a heat — and that's not so much when you consider how heavy castiron is per unit volume. You get a beautiful drawing showing side and back view with cutaways and all the details. This is one of the best articles I've found yet on cupolas.

You also get three other illustrated articles: Small Castings — The Mould Board and Flask Hinge, Casting Whole or in Parts; and Points in Cylinder Moulding, and Welding Steel to Cast-iron and Mending Cracked Castings. The steam engine cylinder they're casting is a bit big for you and me: a mere 44" bore! But it's fascinating to see how the complicated mold with its intricate cores, gagers and vents was constructed.

This is a goody. Most of this is practical, some not, but all of it is good reading. Foundry buffs will really like this. 5½x8½ booklet 15 pages  
Cat. no. 881 \$2.00

**ALL FOUR REPRINTS** — Get all four Mechanics Notebooks 9 through 12 at a special package price. Save \$1.10.  
Cat. no. 920 \$6.90

## Mechanic's Notebook 9 PAPERMAKING & ANCIENT IRON PROCESSES

If you have never made paper, or have even invented the process, you don't know what is missed. It's fascinating to see how cotton, wood fiber, even corn-stalks are turned into quality paper. You can do this easily in your own shop, and it gives great satisfaction to be able to say you made something so common but mysterious as paper.

In these articles published in 1879 you'll see how paper was made commercially using Hollanders to beat the stock and how Fourdrinier machines turned it into finished paper at high speeds. In addition, you get interesting details and descriptions of papermaking by hand, sizing methods and materials, ragcutters and dusting machines, unusual sizes and types of paper, use of such raw materials as natural straw, bleached straw, esparto grass, wood, sugar cane and more.

Also covered are four different primitive methods of smelting iron ore into wrought iron for forging. You'll see the furnaces used and get details of their operation. Three of the processes described (Catalan, Osmund, and Stuckofen) were discontinued when the modern blast furnace was perfected. If you have a source of iron ore, smelting would be a fascinating experiment. Unusual information. 5½x8½ booklet 15 pages  
Cat. no. 878 \$2.00

## Mechanic's Notebook 10 CHARCOAL & EXPLOSIVES

When you char coal, you get coke which is an exceptional fuel for firing blast furnaces and cupolas. When you char wood, you get charcoal which is the same as coke but more chemically pure. It's no accident that you can melt metal with charcoal. Coke is just a cheap substitute for charcoal.

Here you learn how to produce charcoal in open burning stacks as it was done in the old days. You also get details about oven-produced charcoal. You also find several revealing illustrations.

Explosives! Admittedly, you won't find (and wouldn't want) explosives in the average mechanic's tool chest. But manufacturing procedures for explosives is part of "the forbidden knowledge" that is so difficult to find.

## Mechanics Notebook Vol. 7 SCRAPERS, CHISELS, CHIPPING

Scraping is the technique of truing up machine surfaces — the method used by the earliest machine tools builders to build their lathe and planer beds and other components. Here we cover scrapers and their use in the first pages. Most of this material is available in other books in this catalog.

How do you cut a keyway? Shaper? Milling machine? A craftsman could do it with a cold chisel. It's true. Learn about all the cold chisels, and then learn the art of chipping — the removal of metal with cold chisels. Learn how to hold the hammer and chisel. See the examples: working a piston-valve bushing, cutting key seats, keyways, chipping large flat surfaces, chipping strips, die sinking, even making bottle molds! Rare information. 5½x8½ 14 pages  
Cat. no. 874 \$2.00

## Mechanics Notebook Vol. 8 LATHE INDICATORS, OLD ADVERTISING

Tool makers can not only make taps, dies, milling cutters and the like, but they can make handy lathe indicators that can be as every bit as sensitive as a dial micrometer, but a whole lot cheaper. Learn about the construction of a lathe indicator, how to use it to test work, how to build a center indicator and use it, and how to build a holder for both devices.

In the last half of the booklet, you'll see fascinating ads from the 1890's and first years of this century selling Corliss steam engines, gas engines, steam pumps, lathe attachments, bolt machinery, and more. The beautiful engravings and fancy lettering make these ads works of art. You'll wish you could buy some of these machines today. Very interesting. 5½x8½ 15 pages  
Cat. no. 875 \$2.00

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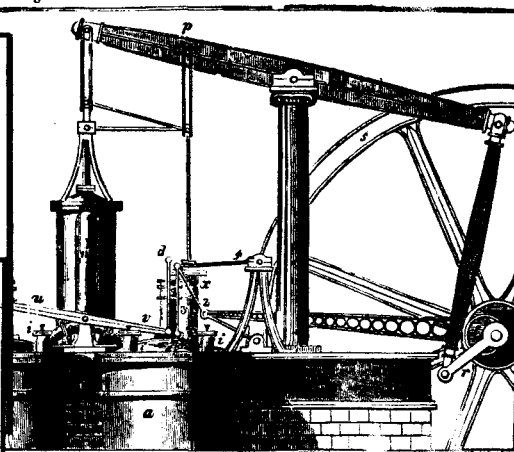
## Mechanic's NOTEBOOK 16

## Mechanic's NOTEBOOK 17

SAW-MILLS

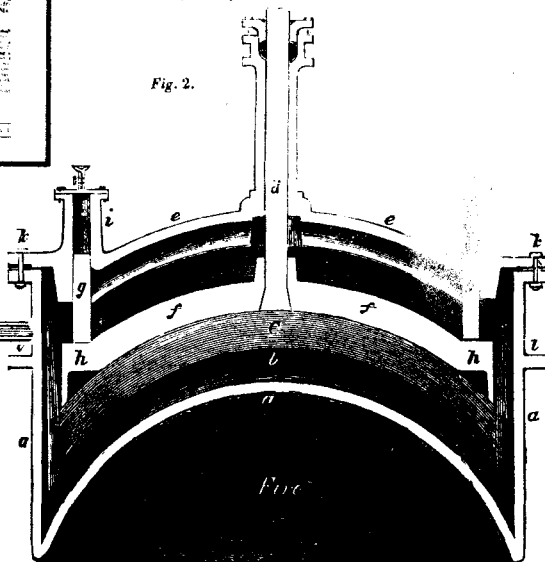
AIR MOTIVE-ENGINES.

Fig. 1.



forming the communication between one of the nozzles and the cylinder. Fig. 2 represents a section of one of the air vessels,

Fig. 2.



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## Mechanics Notebook 16 LATHES & MANGLE

From Nicholson's "Operative Mechanic & British Machinist" published in Philadelphia in 1831 (Andrew Jackson was president!) you can rediscover some very early machines and the ideas behind them.

See the first high precision lathe, its construction, the cross slide, and many other details. This is a Maudslay design not usually seen. Also shown is the Tyler lathe exhibited in 1825 and the Tyler & Mason American steady rest. You'll also see the Tyler "Improved Lever Press" for cutting, piercing, etc. These machines were made by their owners by hand, and despite their primitive appearance were capable of high-quality work. Duplicating their machines might be a very interesting project.

Learn about Pechey's Mangle. What? A mangle gear is used to turn rotating motion into reciprocating motion using a type of rack-and-pinion gearing. Pechey won a silver medal in 1822 for his ingenious new mangle mechanism. You should find it interesting.

More bits and pieces from very early and exceptionally rare books. Raw material for machine designers and builders, fun reading for the machine historian. Get a copy. 5 1/2 x 8 1/2 booklet 15 pages  
Cat. no. 888 \$2.00

## Mechanics Notebook 17 SAWMILLS, FILE CUTTING, & DIVIDING

From Nicholson's 1831 encyclopedia comes this very brief description on the design of a reciprocating sawmill and his comments on rotary sawmills. This mill is similar to the one in New Salem, Illinois, the village where Abe Lincoln started his political career in the 1830's.

Another short section will reveal a file cutter — what it looked like and how it operated.

And then there's Ramsden's dividing machine, capable of rapidly putting the division marks on precision instruments such as surveyor's transits. Although invented in 1777, this dividing engine is capable of extreme precision teeth on the perimeter were cut, and how division errors are reduced and distributed. This is a very important machine in the history of technology, and would make an interesting model.

Rare info. from a rare publication. Don't pass up this information! 5 1/2 x 8 1/2 booklet 15 pages  
Cat. no. 889 \$2.00

## SPECIAL PACKAGE

Mechanics Notebooks 14, 15, 16, 17 — Normally \$9.00. Save \$1.25.  
Cat. no. 923 \$7.75

## Mechanics Notebook 14 GAS & AIR ENGINES

From Luke Herbert's "Engineers and Mechanics Encyclopedia" printed in London in 1835 come these fascinating glimpses into some of the very first engines ever put into use. This should be dynamite information for both the model builder and the technology buff.

"Gas" engines extract energy from alternate expansion and condensation of liquefiable gases. Shown are the Brunel engine, and the Brown gas vacuum engine patented in 1824.

The air pressure engines are shown operating cranes, a forging hammer, and a pneumatic railway — all very quaint! The air motive engine section describes and shows the Stirling engine patented just eight years before, and the Parkinson & Crossley hot air engine patented a year after that. You'll also find out why the Stirling engine used in a stone quarry was replaced by a steam engine.

Very rare info. from very rare books. Here's a chance to build a model engine that looks and performs like the originals! 5 1/2 x 8 1/2 booklet 21 pages engravings on wood  
Cat. no. 886 \$3.00

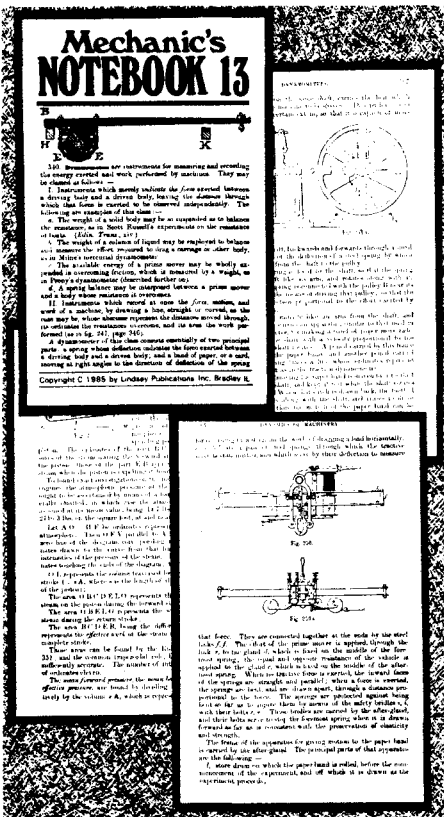
## Mechanics Notebook 15 COMPOUND ENGINES

If you're designing a steam engine, you'll want it to be as efficient as possible so that you can reduce fuel consumption and boiler size. "Steam Engine Design" described elsewhere in this catalog is a gem of a book for design, but it does not consider high efficiency multiple expansion engines. You can learn about them here.

Learn about double, triple and even quadruple expansion engines, advantages, "Woolf" and receiver types, ideal indicator diagrams, cylinder proportions, ratio of cylinder capacities, formulas for pressures, diameters, and more. You'll also get a list of all the engines exhibited at the Columbian exhibition in 1893 together with their specifications.

This unusual info. was reprinted from Kent's "Mechanical Engineer's Pocket Book" 1903, is detailed and straight-to-the-point. Essential to steam buffs and engine designers and builders. Get a copy. 5 1/2 x 8 1/2 booklet 14 pages  
Cat. no. 887 \$2.00

# Mechanics Notebook



## Mechanics Notebook 13 DYNAMOMETERS, STEAM ENGINE INDICATOR

"Lucky 13" brings you dynamite info. on machines that measure horsepower and performance.

Learn about the common prony brake, Morin's traction dynamometer, Morin's rotary dynamometer, and the torsion dynamometer. Then follows a short section on the elasticity of spiral springs.

Next learn about the steam engine indicator. Trying to get performance from a steam engine without the use of an indicator is like trying to drive at night without headlights! Not only does it allow calculation of horsepower, it can be used for fine tuning of valve systems.

The explanations are detailed but very clear — remarkably clear considering this material was written in 1873 by Wm. J. M. Rankine! Great material. Must reading for the gas, oil and steam engine buff! Get a copy! 5½x8½ booklet 14 pages  
Cat. no 883 \$2.00

### IF YOU WANT TO STAY ON THE MAILING LIST

We all know that catalogs cost money to send. And just like Sears & Roebuck and the rest, the only way I can continue to send catalogs is if I get an order from you. I can understand if money is tight, but if you don't order something once in a while, I assume you've lost interest. So if it has been a while since you've ordered and you want to stay on the mailing list, send us an order. The dollar amount doesn't matter. If you show us you're still interested, we'll continue to send catalogs.

# Boilers!

## STEAM BOILERS

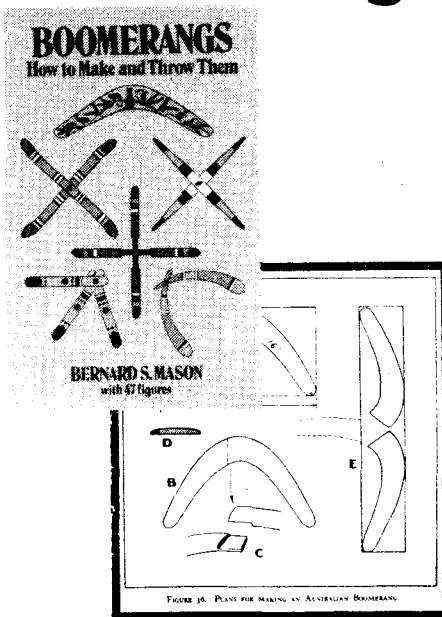
You may have thought about cutting energy costs by changing to steam power. If you haven't thought about it, maybe you should. Wood, old lumber, paper, cardboard will boil water, and if you get a lot of these discards for little or nothing, it can become free energy.

If you want to generate 3000 watts of electricity, you divide by 748 watts per horsepower to find that you'll need at least 4 shaft horsepower — maybe 7 or 8 by the time you figure losses. There are formulae around that will show you how to calculate steam engine bore and stroke to get a given horsepower with a given steam pressure. But how on earth do you figure boiler size? How big is an 8 hp boiler? The "Steam Boilers" booklet will show you.

These pages originally published in 1880, will show you, using tables and diagrams, how to estimate the heating surface of your boiler, what size the grate should be, how much coal will be consumed, how many pounds of water will be evaporated. You will also be shown how to calculate the boiler horsepower using Watt's rule, compensating for ordinary slide-valve engines, or high-efficiency automatic cutoff designs.

Too small a boiler could be a disaster, while too big a boiler is too inefficient. Calculate the right size with this publication. Valuable reference material. Very hard to find. Get a copy.  
5½x8½ 15 pages  
Cat No. 856 \$2.00

# Boomerangs



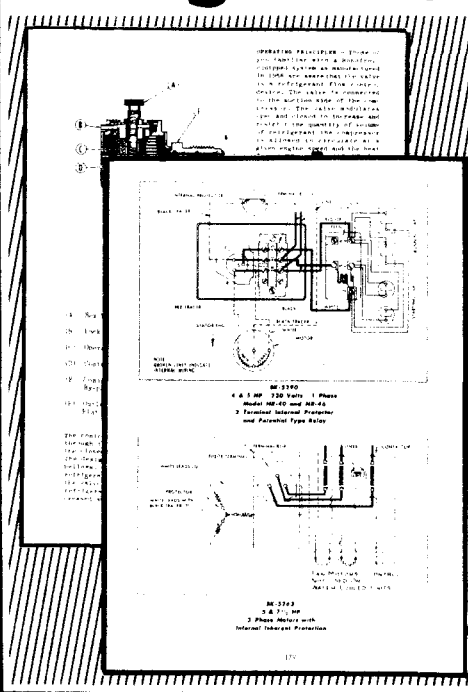
## BOOMERANGS How to Make and Throw Them by Bernard S. Simon

"It only takes minutes to make a good, guaranteed-to-return boomerang. By following a few more simple steps you will learn how to throw it so it will always return to you..."

Learn how to make all of the standard designs: pin-wheel, boomabirds, airplanes shapes, other ornamentals, tumblesticks, and other.

This is a reprint from "Primitive and Pioneer Sports" of 1937. And it's fascinating. Look at the low cost. How can you afford not to have a copy? 5½x8½ paperback 99 pages  
Cat. no. 41 \$2.75

# Refrigeration Handbook!



## DOOLIN'S TROUBLE SHOOTERS BIBLE by James H. Doolin

This thick hardcover book on refrigeration is in the same class as Dave Gingery's books — straight-to-the-point. Doolin's approach is roll up the shirt sleeves and nuts! Let's fix that refrigerator, air conditioner or heat pump. Only the theory you need to do the job is presented. Many of the diagrams and drawings look like they're drawn in pencil or right off a chalk board. That's the first section.

The second section is a collection of manufacturer's specifications, wiring diagrams, parts lists, photos, and the rest of the data you'd need to make the repairs.

You'll learn about freon, gauges, all the tools, motors and controls, customer relations, vacuum pumps, auto air conditioning, and lots more. Jim Doolin published this as a textbook for his refrigeration school. The people who graduate from his school are true repairmen. The same cannot be said of other schools.

This is a top rate book. Expensive, but it delivers. If you want to repair for a living or just experiment, you'll find this book extremely helpful. Top recommendation. 8½x11 hardcover 332 pages  
No. 196 \$35.00

# Old Wooden Ships!

## WOODEN SHIP-BUILDING

by Charles Desmond

With this screwy weather we've had over the past couple of years, it might pay to build an ark. I don't know where to get two of each animal, but this book should help build the ship.

Actually this is a reprint of 1919 book that is not really how-to at all. It's a dynamite book that details the technology of wooden ships — how they were designed and built.

It's loaded with pictures and diagrams showing ships of the day being built, and is flat out fascinating. Doubly so, since wooden ships are no longer built.

Maybe you're just a sophisticated grease monkey who gets his kicks turning a No. 2 Morse taper. If so, then you'll appreciate the complex curves that go into a hull. It's like trying to turn hundreds of different tapers each 300 foot long! You'll like it because people who read this catalog generally appreciate craftsmanship. And is there ever craftsmanship here!

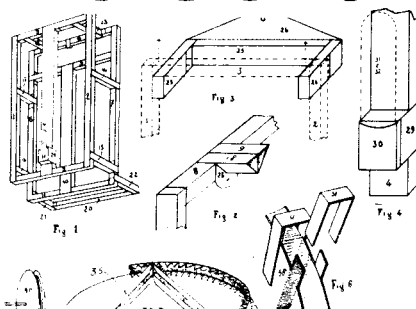
"Ship-Building" is off the beaten path, but good. A must for wood workers, sailors, students of history, and people who just plain appreciate machines. 8½x11 paperback 224 pages

Cat. no. 437

\$14.95



# Build a paper clock!



## Make Your Own WORKING PAPER CLOCK

by J. S. Rudolph

Gears, axles, frame, and all parts are printed on heavy card stock. You cut 'em out, and glue 'em together. You get a pendulum clock with minute and hour hand that "keeps perfect time" and be rewound and regulated. You might go bananas cutting out the gears, though. Order two copies. Make the paper clock with one copy, and use the second copy as full size plans to make a version from wood or metal. Interesting! 9½x12½ 40 pages papercover

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# Mapmaking!



## THE STORY OF MAPS

by Lloyd A. Brown

It took men a long time to accept the fact that the world was a sphere rather than a plane. It took them just as long to make accurate maps of their world.

Chapters include: the earth takes shape, the habitable world, the world of Claudius Ptolemy, the middle ages, charts and the haven-finding art, the map and chart trade, the latitude, the longitude, survey of a country, and survey of a world. Includes 86 illustrations.

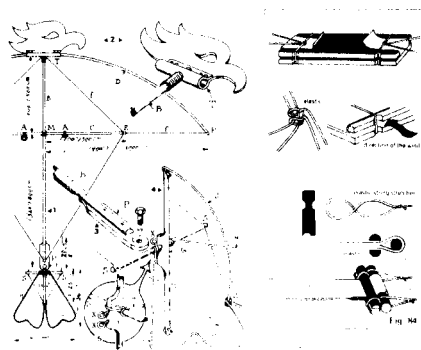
Although some parts are kind of dry for me (although you may really enjoy them), I was fascinated by John Harrison's seagoing chronometer built in the early 1700's. Until this incredible machine, accurate to a few seconds each month, was perfected, the only other way to calculate longitude was by observing the moons of Jupiter and comparing their movement to tables compiled by Galileo! It's a wonder any ship ever found its destination back then! An incredible story...

Interesting. Makes me want to experiment with map making. Now if I can only find a book on how to build an accurate theodolite. Order a copy. 6x9 paperback 397 pages first published in 1949

Cat. no. 543

\$7.95

# Go fly a kite!



## KITES and Other Wind Machines

by Andre Thiebault

I forgot how much fun flying a kite can be until my kids demanded that I help them. We had a great time!

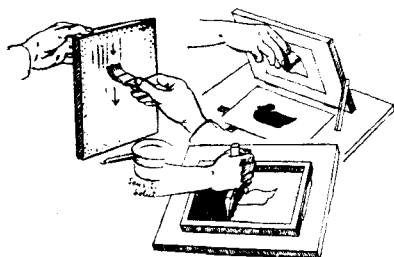
Think about it. You take some sticks, paper, and string and build an airfoil that flies high above your head. You can experiment with a variety of designs: fancy and decorative, or big enough to hoist heavy cameras or even a man.

You get history, plans, ideas for applications from photography to signaling to launching rockets. You also get a couple of chapters on windpowered beach toys, and other simple windmachines. There's a lot of interesting info. here at a very reasonable price. There is one other kite book I know of, but it goes for twice this price. You'll find hours and hours of fun here. Add it to your books on boomerangs and sundials.

Cat. no. 451

\$6.95

# Learn SILKSCREEN PRINTING!



## COMPLETE BOOK OF SILKSCREEN PRINTING PRODUCTION

by J. I. Biegeleisen

Take an old picture frame, cover it with cloth, glue a stencil to it, and you have a primitive silkscreen. You lay it on paper, cardboard, or a teshirt, put thick ink on the other side and use a squeegee to force the ink through the stencil. You've printed your design. It's that simple.

You can print signs, shirts, decals, wall-paper and much more without expensive equipment. This book will show you how to do everything from building the simple frame to multi-color printing.

Silkscreen is versatile and low cost. It's a skill you should have. Here's a dirt cheap book that will show you how.

5½x8½ paperback 253 pages illustrated  
No. 424 \$4.50

# Repair Old Clocks!

## Repairing and Restoring PENDULUM CLOCKS

by John Plewes

There are lot of clock books on the market, and I've seen quite a few. Here's one I really like because it appears to give solid practical how-to for the restorer of some of most common American clocks.

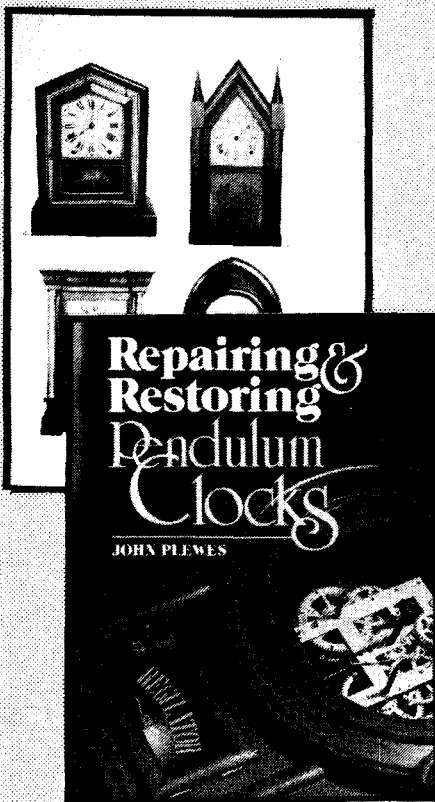
At auctions around here, I see a lot of the clocks shown in this book going for quite reasonable prices. Trouble is that they don't always work. But with this book chances are most any handy person could get them back in shape.

You'll learn about basic repair, American, Canadian, English, French, and German clocks with regulator, fusee, 8-day movements and more. Part three covers repair to paper, wooden, zinc, silvered dials and others. You get practical tips on everything from repairing veneer and correcting warp with holes to marking and making bushings.

Both clock technicians and general machinists should find interesting the plans for special jigs and tools: a vibrating cleaning machine, bending tools, banjo weight molds, key shrinkers, special homemade lathe chucks, split stake and more. You'll learn how to repair and replace missing teeth, measure mainsprings, repair hands, dish a barrel, fit new pinion leaves and much more.

This looks to me like rare info. Anytime someone shows you how to repair a complicated mechanism clearly and concisely, I automatically take notice. This may not be the only high grade clock repair book available, but I like this. I think you'll like it too.

Great info. 8½x11 paperback 224 pages  
Cat. no. 1208 \$12.95



# GEODÆSIA

## GEODESIA Art of Surveying by John Love

Has Gingery flipped out? Why, after publishing a dynamite series on building machine tools, has he chosen to reprint a surveying book from 1768? Has he gone bananas?

Truth is, this is another how-to book. I saw the original during a recent visit, and it is a beautiful book. And although the warmth and feel can never be reproduced in a paperback, the value of "Geodesia" lies in the content.

Dave writes in his introduction, "Since it is not likely to be accepted as a useful text for the instruction of surveyors in this age, anyone might ask the reason for reprinting such a specialized book as this..."

Although the Love teaches surveying, you must learn basic mathematics, geometry, and clear thinking. These are skills that Dave Gingery has mastered and has used to design his remarkable machine tools. If anyone can appreciate the power of basic and diversified knowledge, it's Dave. Knowledge is more valuable as a tool than anything in your shop.

Dave continues, "the text is also a rather pure study in punctuation and grammar, and I recommend it as a discussion guide to students of English, mathematics, mechanical science, writing, printing all of the social studies."

In other words, here's an old, old book. When you see how clearly the author explains

the extraction of square roots, for instance, you'll get the same feeling that this is some magic volume that reveals secrets known only to the ancients. That may not really be true, but I get a sense of accomplishment knowing how to calculate square roots with a pencil and paper as opposed to pushing a calculator button. And who knows? Maybe I'll even learn some surveying!

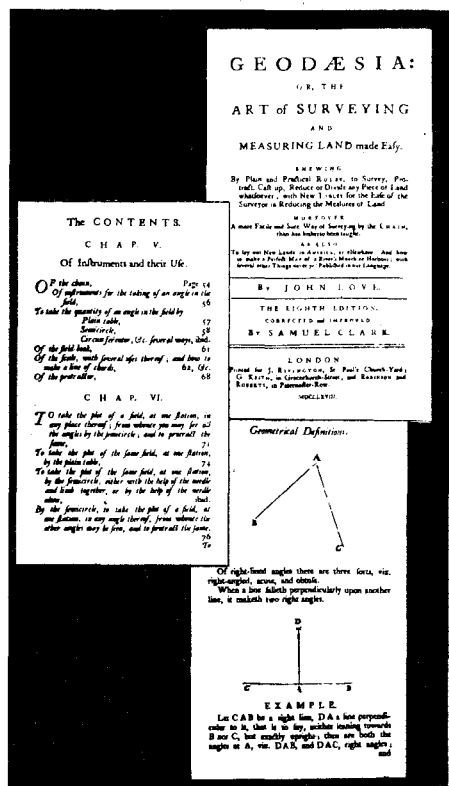
Chapters include: geometrical definitions, general arithmetic, geometrical problems, of measure in general, of instruments and their use, an unnamed chapter on measuring methods for a variety of fields, how to cast up the contents of a plot of land, of laying out new lands, of reduction, instructions for surveying a manor, county or whole country, of dividing lands, trigonometry, of heights and distances.

The type is large and once you understand that "s" looks like an "f" as they all did in colonial times, you'll agree that the book is very readable.

"Geodesia" is a fascinating book. There's a lot to be learned, but reading it is more of an adventure than anything else. This book is priced at a fraction of what it should be based on production costs and the limited appeal. But Dave Gingery is interested in putting this in as many hands as possible. He thinks that highly of it. We both think you'll like it.

5½x8½ paperback 288 pages illustrated  
Cat. no. 534 \$9.95

## Incredible surveying book reprinted from the 1700's by Dave Gingery!



# Fantastic chemical process book!

## Shreve's CHEMICAL PROCESS INDUSTRIES by George T. Austin

You're gonna think I'm nuts, but I'm telling you that this industrial reference book is plain fun to read. It covers just about everything: from the production of beer to the glass bottles you pour it from.

Chapters include: chemical processing and the work of the chemical engineer, water conditioning, fuels, air-conditioning, refrigeration, coal chemicals, fuel gases, industrial gases, industrial carbon, ceramic industries, portland cements, glass industries, salt and misc. sodium compounds, and industries for chlor-alkali compounds such as caustic soda and chlorine, electrolytic refining of magnesium and aluminum and more, electrochemical production of abrasives, phosphorus, potassium and nitrogen compounds, sulfur and sulfuric acid, hydrochloric acid, and explosives. You'll learn about photographic products, production of paints and varnishes, pesticides, perfume, oils, fats, waxes, soap, detergents, sugars and starches, paper, plastics, rubber, manmade fibers, petroleum processing, dyes, and more.

This is fascinating! How is firebrick made? It won't give you the exact recipe, but it will tell you the ingredients, how the bricks are formed and fired. Or would you like to see the processes needed to make the polyethylene in your kitchen? Maybe you'd like to process rubber. Did you know that fermentation is an essential step if you want to make chocolate with a pleasant flavor? Or would a flow chart for the commercial production of whiskey be more to your liking? Did you know that most toilet soap is made from a 90/10 ratio of tallow and coconut oil? And that the active ingredient in deodorant soaps prevents the breakdown of perspiration into odorous compounds?

If you like to live dangerously maybe you'd like to make a thousand gallons of nitric acid and then mix it with hexamethylenetetramine to form RDX, the most powerful explosive presently known. Did you know that the most common glass is soda-lime glass? And that TV picture tubes are produced by centrifugal casting? Or maybe you just want to know how coke is produced these days.

Better yet, at the end of each chapter is a list of at least a dozen additional books on specialized topics. So this book could be the starting point for detailed research into a chemical process that interests you.

This book is loaded with the production secrets of today's materials. You'll see lots of flow charts and diagrams, and you'll get tables of ingredients, etc. The chemistry is not very complex, except perhaps in the plastics section where polymerization is discussed. It's quite readable, and even though not a how-to book, delivers fascinating detail. Good reading. Great reference. When I ordered a sample copy, I did not expect much. But was I wrong! I really like it. If this is your kind of thing, you will too. Hardcover 7x10 859 pages

Cat. no. 1211

\$39.95

# Chemistry of Explosives

## THE CHEMISTRY OF POWDER & EXPOSIVES

by T. L. Davis

I don't advise you to make your own explosives unless you're interested in quickly and violently remodeling your home and your body. But you won't find a more interesting book anywhere.

Although originally published in 1941 and 1943 for chemists, this hardcover volume will reveal everything from fireworks to nitroglycerine and detonators, and it still seems up-to-date. You'll discover not only the chemical composition of explosives but you'll learn their history and how the compounds were and are made. You'll find it's not all that hard to make nitroglycerine or mercury fulminate, or even roman candles and the rest. Again, I don't advise it. One mistake and you're gone. But it IS interesting reading.

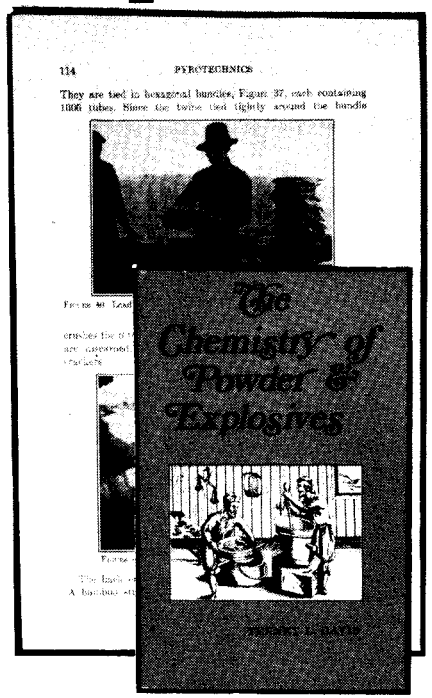
The one part I found fascinating is an illustrated section on how the Chinese make firecrackers with very primitive yet effective mass production equipment.

Rare information! An unusual book to say the least. If you're interested in chemistry, you'll like this. If you're a terrorist, I advise you to buy a copy and blow yourself up . . . before you get the rest of us! Seriously, it's a good book. Order a copy.

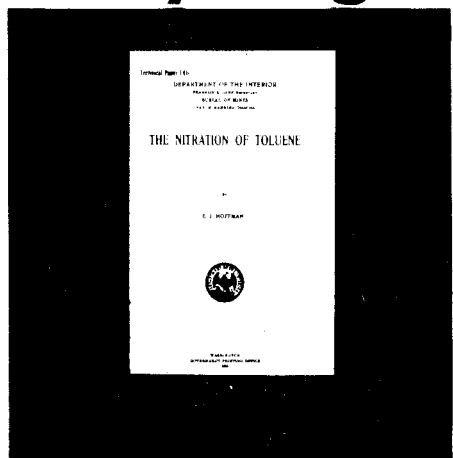
6x9 hardcover 500 pages

Cat no. 515

\$14.00



## Make TNT! (die young...)



## NITRATION OF TOLUENE

by E. J. Hoffman

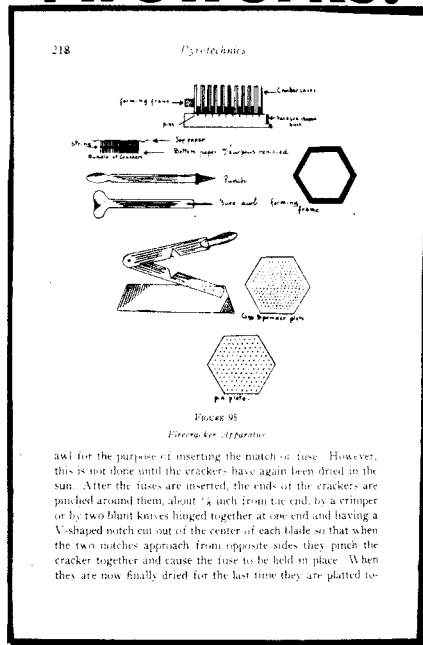
The nitration of what? Toluene? Waffor?

Toluene is the solvent in airplane glue that kids were getting high on a few years ago. Add some nitric acid to it, and you can convert it into tri-nitro-toluene, commonly abbreviated TNT. Now do you know what I'm talking about?

This is a reprint of a turn-of-the-century government booklet put out by the Bureau of Mines. Described are several methods of manufacture of several different products and some experiments.

You'll find it interesting reading. If you want to try making explosives, take out a life insurance policy first, and put me down as

## Fireworks!



## PYROTECHNICS

BY George Weingart

Yes, you can make your own fireworks. Yes, you can go to jail. And yes, you can get yourself killed. I don't recommend this, but some people won't listen. Covers ingredients and construction of sky rockets, roman candles, fuses, firecrackers, torpedoes, snakes, flower pots, pin wheels, large displays, and much more. Dangerous, but interesting reading. Rare info.

5 1/2 x 8 1/2 paperback reprint from 1947 244 pages

Cat no. 525

\$6.50

# Recover Old Silver!

## SILVER RECOVERY METHODS

by Robert T. Lindsay

### SILVER RECOVERY METHODS

by R. T. Lindsay

If you can gather used photo paper, film, negatives from x-rays and printers, old photo fixer and the like, you can extract the scrap silver and make some good money.

You'll be shown three recovery methods for reclaiming the silver in fixer, and separate methods for films and papers. You'll even get tips on locating silver sources and buyers for the silver you refine.

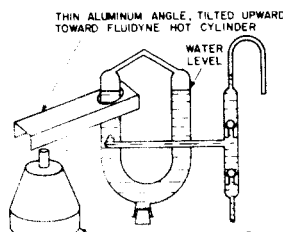
A great many areas are wide open for this business, but it will take work over a period of time (like other businesses) to build a profitable and secure trade. Or order the manual, try the procedures, and be in position to profit from the next big boom in silver prices. If you're lucky, you could really make out.

5 1/2 x 8 1/2 booklet 30 pages  
No. 173

\$3.00

# Unusual STIRLING Engines!

48 LIQUID PISTON STIRLING ENGINES



## LIQUID PISTON STIRLING ENGINES

by C. D. West

The earliest practical heat engine was invented in 1698 by Thomas Savery, with later improvements by Newcomen, Watt and others. That first engine was a liquid piston engine.

West not only explains operation of this Stirling cycle engine, he provides formulas and even instructions on how to build one out of plastic, wood and even a fruit jar! Incredible! After that, chapters go into more advanced power calculations, heat losses, design examples, and efficiency discussions.

You get a great cross between practical information and theory. There are plenty of formulas but no calculus, just the math you need to work out your own designs.

It seems to me that this is just the kind of book that the basement mechanic needs to design new and unusual engines. Why follow the leader? Be the leader! An unusual new book that should be of interest to a great many people.

6x9 hardcover 152 pages  
Cat No. 1146

\$24.95

50 LIQUID PISTON STIRLING ENGINES

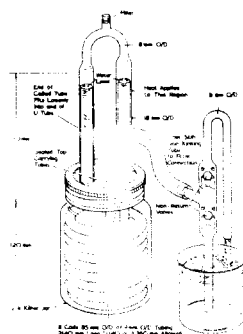


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**LIQUID PISTON STIRLING ENGINES**  
C.D. WEST, Ph.D.

# You can ELECTROPLATE!

by Lee Scott Newman  
and Jay Hartley Newman

## Electroplating and Electroforming for Artists and Craftsmen

## ELECTROPLATING and ELECTROFORMING

BY Newman & Newman

Back in print again! This is one of the best, down to earth, practical plating books I've seen — and I've seen quite a few. True, this book is written for artists who want to create sculptures and the like, but you'll find the information useful for all types of work.

You'll learn how to plate copper, silver, nickel, gold, zinc, brass, German silver, green and antique golds. You get complete illustrated data on power supplies, tanks, heaters, ventilation, anodes, and surface preparation. Problems such as grain, adhesion, blistering, pitting and others are discussed in detail.

You get all the facts, procedures, formulas, and all the rest. It's well illustrated, easy to read, and valuable. I highly recommend it for the beginning plater.

6 1/2 x 11 96 pages paperback  
No. 153

\$9.95

# Fly like a bird! Low-cost! Easy! Safe!

## ULTRALIGHTS

by Rick Carrier

Fly free as a bird. Wouldn't that be fun? In an airplane you could almost assemble in the backyard and takeoff in the street out in front? You can do just that in an ultralight (if the neighbors don't complain about the noise).

You'll learn about the aircraft: structural components, structural styles, engines, propellers and all the rest. You get the FAA rules covering ultralights. You'll also get preflight briefings on precautionary measures and safety checklists. After they have you all excited, they'll tell you where to get your own ultralight with a detailed list of manufacturers, along with publications, insurance and miscellaneous equipment. As an extra, they throw in the complete training procedures for the Eagle XL and the Quicksilver MX.

Flying is really safe. I worry more about being wiped out on the highway leading to the airport than cruising at 3000 feet — and insurance premiums back up my fears. But if you're afraid to fly, I can understand that too.

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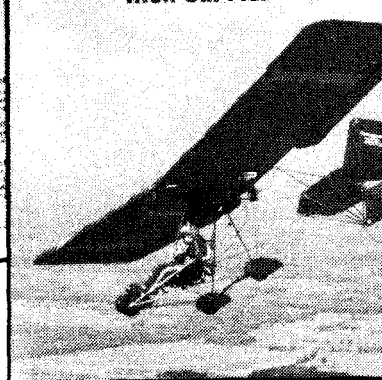
QUICKSILVER MX

## OPERATIONS/EQUIPMENT

SPECIFICATIONS	QUICKSILVER MX	EAGLE XL
Engine	100 hp	100 hp
Wingspan	20 ft	20 ft
Length	10 ft	10 ft
Weight	1000 lb	1000 lb
Max. speed	100 mph	100 mph
Altitude	10,000 ft	10,000 ft
Range	100 miles	100 miles
Maneuverability	Excellent	Excellent
Stability	Excellent	Excellent
Control	Excellent	Excellent
Visibility	Excellent	Excellent
Communication	Excellent	Excellent
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Weather	Excellent	Excellent
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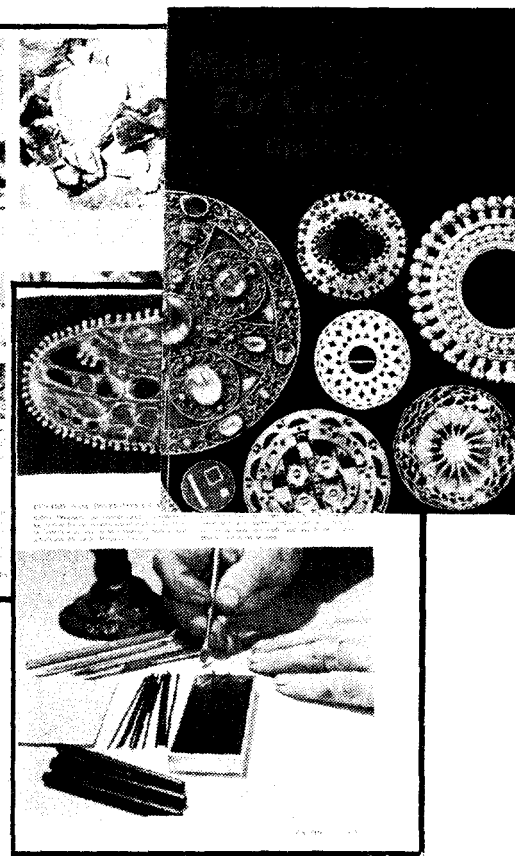
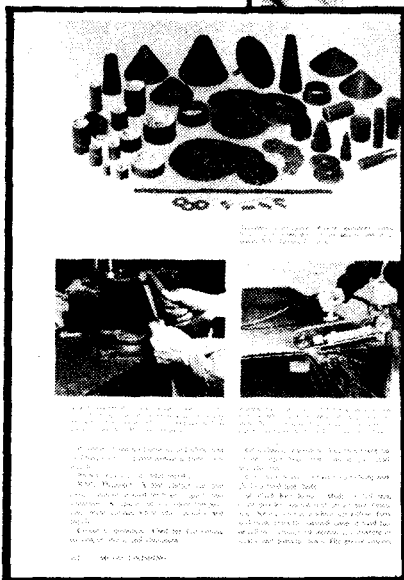
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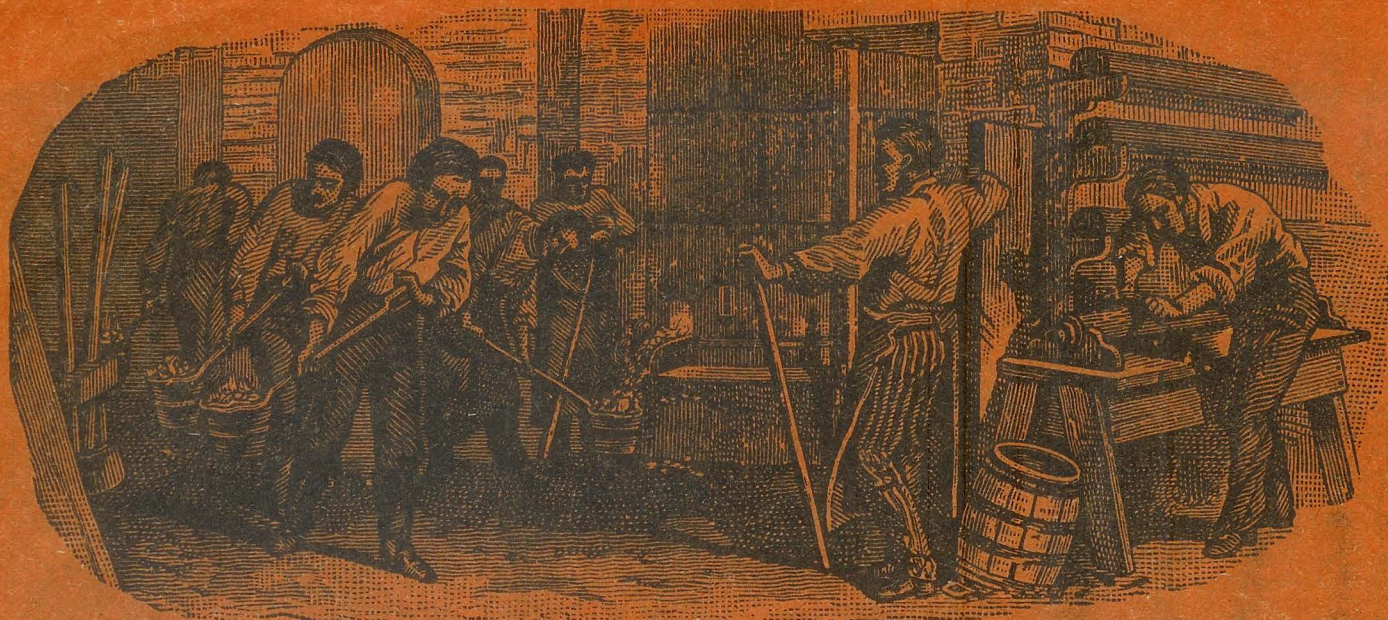
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